NETWORK WORLD
The Newsweekly of User Networking Strategies
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Vendors ally on software distribution

By Jim Duffy
Senior Editor

LITTLETON, Mass. — Thirteen major vendors, including IBM, Lotus Development Corp. and Microsoft Corp., are close to unveiling an API that will enable applications to work with a variety of software distribution services.

The Common Software Licensing Application Program Interface will eliminate the need for software firms to tailor applications to various distribution products and free users from having to buy programs for each distribution environment.

The API, for example, is intended to allow a single version of a client application, such as Microsoft Word or Lotus 1-2-3, to receive software copies from a variety of licensing or software distribution services from DEC, Hewlett-Packard Co., the Open Software Foundation, Inc. (OSF) and others.

"We're trying to standardize 'home brewed,' application-specific licensing technologies so that programmers will be able to code to one interface," said Willy Burgess, manager of DEC's software licensing technology group.

Banyan Systems, Inc., Bor-

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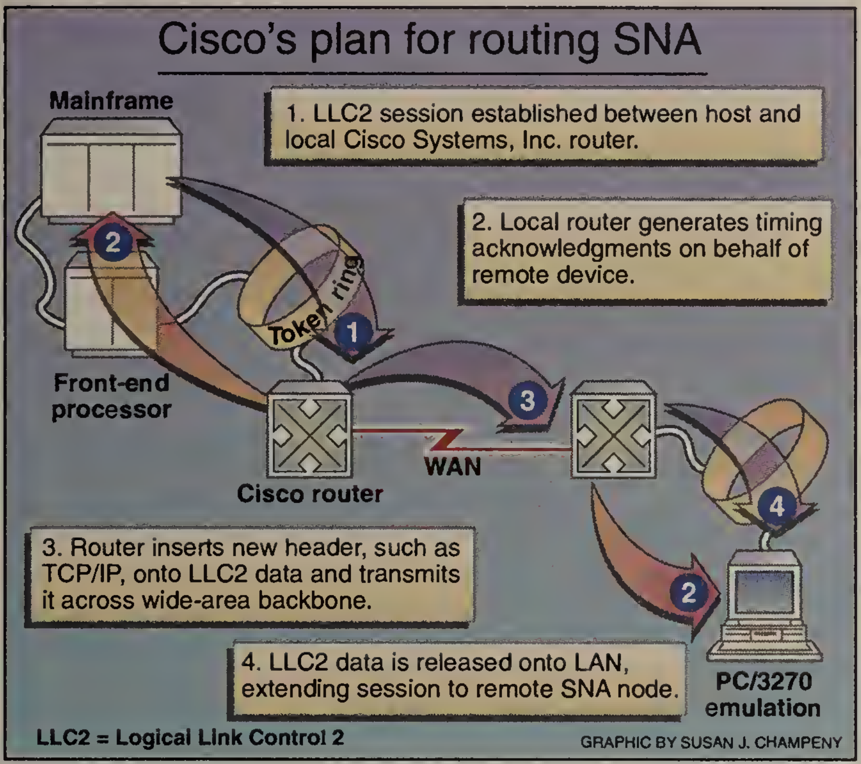
Cisco's plan for routing SNA



1. LLC2 session established between host and local Cisco Systems, Inc. router.
2. Local router generates timing acknowledgments on behalf of remote device.
3. Router inserts new header, such as TCP/IP, onto LLC2 data and transmits it across wide-area backbone.
4. LLC2 data is released onto LAN, extending session to remote SNA node.

LLC2 = Logical Link Control 2

GRAPHIC BY SUSAN J. CHAMPENY

Users see competition as savior of the local loop

By Wayne Eckerson
Senior Editor

CHICAGO — Information systems executive Jack Kennedy sees a disaster in the making but can't do anything to prevent it.

Kennedy, a senior vice-president of computers and communications at the Midwest Stock Exchange here, has been trying unsuccessfully for two years to get carriers to offer a diverse routing service for incoming switched calls.

Traders at the Midwest Stock Exchange rely heavily on the telephone to receive orders from brokers and customers, and a central office outage or cable cut could shut down the exchange.

Like many network managers, Kennedy is frustrated by how slowly monopoly local carriers are moving to provide advanced services — especially for disaster recovery — which are critical for sustaining and enhancing business operations.

"I don't understand why carriers can't use the intelligence built into their digital switches to re-

(continued on page 6)

Cisco to flesh out SNA routing strategy

Firm to detail five-phase plan calling for support of some PU 4 features, APPN, other enhancements.

By Paul Desmond
and Maureen Molloy
Network World Staff

MENLO PARK, Calif. — Cisco Systems, Inc. this week is expected to detail its SNA routing strategy, which calls for significant improvements in the way its routers support IBM traffic but falls short of the full SNA routing capabilities the company announced nearly a year ago.

Last November, Cisco admitted it was backing off from its original plan to provide native Systems Network Architecture support by enabling its routers to emulate PU 4 devices. Instead, the company said it was adopting a five-phase strategy for supporting SNA traffic over multiprotocol backbones.

Phases 1 and 2, completed last year, involved the upgrade of Cisco's routers to support encapsulation of both token ring-based SNA data and Synchronous Data Link Control data in Transmission Control Protocol/Internet Protocol packets for transmission over an internet.

This week, according to sources familiar with the announcement, Cisco will detail Phase 3 and some of Phases 4 and 5. These new phases include enhancements that keep SNA sessions active even when a network link goes down, provide some PU 4 capabilities and support IBM's

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Frame relay's effect on private-line sales

If frame relay is priced...	The percentage of private lines lost is...
15% below private lines	30% to 40%
The same as private lines	5%
Above private lines	Less than 5%

SOURCE: STRATEGIC NETWORK CONSULTING, INC., ROCKLAND, MASS.

GRAPHIC BY TERRI MITCHELL

Private-line base shapes Big 3's frame relay plans

By Bob Wallace
Senior Editor

It is said that where you stand on an issue depends on where you sit.

Case in point: frame relay. How aggressively long-distance carriers have attacked the emerging frame relay market has hinged largely on how much each stands to gain or lose from user adoption of the technology.

If priced right, frame relay could dramatically diminish use of private lines. While the cannibalization of dedicated links has only begun, analysts say the fear of losing market share is reflected in the divergent frame relay strategies of the Big Three long-distance carriers.

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NETLINE

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MICROSOFT ENRICHES its OS/2-based SQL Server, bringing it up to par with Sybase's Unix version. Page 2.

BASIC NETWORKS SET to unveil RISC-based multiprotocol bridge/router cards for PCs, LAN servers. Page 4.

FCC ERROR LETS changes for three Tariff 12 deals slip through the cracks. Page 4.

T3PLUS BOOSTS CAPACITY for its T-3 muxes with introduction of its new UNITYplus architecture. Page 4.

CAYMAN MELDS hub/router capabilities in its GatorStar GX product. Page 6.

PROPOSED FEDERAL caller ID regulations force users, state agencies and carriers into regulatory battle. Page 6.

NEWSPAPER

FEATURE

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Vendor tools solve puzzle of fitting Macs into nets

By Leonard Hindus
Special to Network World

These days, every vendor views Apple Computer, Inc.'s once-maverick Macintosh as an essential piece of its networking puzzle.

Last year was particularly notable for Apple. The Apple-IBM partnership dominated the news in July, when the firms announced a wide-ranging relationship that includes joint product development, and again in October, when the details of the relationship were spelled out. Although those may have been the biggest stories, Apple's Macintosh starred in other events in 1991.

In late October, for example, Banyan Systems, Inc., Microsoft Corp. and Tandem Computers, Inc. announced support for Apple's seven-layer AppleTalk protocol stack at NetWorld 91 Dallas. Traditional

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New OS/2 SQL Server seeks parity with Unix cousin

Capabilities to include server RPCs, cascading triggers, disk mirroring and scrolling functionality.

By Timothy O'Brien
West Coast Bureau Chief

SAN FRANCISCO, Calif. — Microsoft Corp. is expected to announce here tomorrow a new version of its OS/2-based SQL Server database, bringing the product up to date with the Unix version offered by codeveloper Sybase, Inc.

At its First Annual International Microsoft SQL Server User Week, Microsoft will introduce Version 4.2 of SQL Server, adding features such as the capability to execute server-to-server remote procedure calls (RPC) to provide data location transparency for complex queries.

"For people either using SQL Server or considering it, these new features are extremely important," said Richard Finkelstein, president of Performance Computing, Inc., a consulting firm based in Chicago. "This release fills in key pieces that were missing and increases the reliability. of the product."

Although analysts say the market for local-area network-based database servers is still in its infancy, most admit that Microsoft's SQL Server is an early leader in terms of number of clients and production systems under development.

By basing its OS/2 SQL Server database product on Sybase's well-regarded SQL Server, which

(continued on page 46)

Bank turns to int'l EDI to offer funds transfer info

Offers payment, remittance data in one message.

By Barton Crockett
Senior Editor

CHICAGO — First National Bank of Chicago next month expects to begin offering the first international funds transfer service in the U.S. that carries electronic payment and remittance information in one message.

The First Chicago Corp. subsidiary, based here, views international, financial electronic data interchange as a strategic offering that will help it win business from large corporations clamoring for such capabilities.

First Chicago expects the Pratt & Whitney division of United Technologies Corp. in East Hartford, Conn., to be the first user of the service. The airplane engine maker plans to use the service to receive both electronic payments and remittance information from Qantas Airways, Ltd., an Australian airline.

No other U.S. bank provides an international, financial EDI service to a company in this country, according to Chris Wagner, a First Chicago senior vice-president and cash management department head.

Financial EDI is a nascent service where banks transmit both electronic payments and remittance information in the same message. Currently, most remittance statements are printed on

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CLI to unveil first desktop video capabilities for Macs

By Ellen Messmer
Washington Correspondent

SAN JOSE, Calif. — Compression Labs, Inc. (CLI) this week is scheduled to announce its first desktop videoconferencing products, a set of components that can turn an Apple Computer, Inc. Macintosh into a videoconferencing system.

Available this spring, the CLI Cameo Personal Video System Model 2001 will be the first inexpensive, color, full-motion video, microcomputer-based desktop videoconferencing system on the market for use with Integrated Services Digital Network.

The CLI Cameo 2001 includes a stand-alone video processor module and a camera module that plug into external standard ports on the Macintosh IIci, IIfx or Quadra running the System 7 operating system and QuickTime software to process the video signal. Users that have camcorders and do not need the camera module can purchase the Model 2001 for $1,595 and plug their camcorder into the video module.

The video processor module will enable Macintosh users to open a 6-, 3- or 1.5-in. wide videoconferencing window on their

(continued on page 6)

Briefs

IBM set for router release. IBM is once again set to announce its long-awaited multiprotocol router, sources said. Originally scheduled to be unveiled in December 1991, the router was delayed by development snags but now appears ready to be released Jan. 21 along with the AIX-based net management system that IBM has developed, which is based in part on Hewlett-Packard Co.'s OpenView.

The management system, reportedly dubbed NetView/6000, will use the Simple Network Management Protocol to manage devices attached to Transmission Control Protocol/Internet Protocol nets and will be able to communicate to NetView via IBM's AIX-based service point facility.

IBM is also scheduled to unveil new low-end, mid-range and high-end models of its RISC System/6000 workstations and servers, as well as a new release of AIX.

Motorola Codex axes 400 positions. Motorola Codex last week eliminated 400 jobs worldwide in an effort to refocus its business on local-area network internetworking and network access products. One hundred and sixty-six of those positions were eliminated through a voluntary resignation program implemented last month ("Codex moves to cut work force," Briefs, *NW,* Dec. 23, 1991). The majority of Motorola Codex's cuts affected positions in the U.S.

Calling all frame relay users. The Frame Relay Forum is sponsoring a user roundtable on Jan. 31 to discuss frame relay issues. Timed to coincide with the conclusion of the ComNet trade show the previous day, the roundtable will be held at the Georgetown University Conference Center in Washington, D.C. According to Andrew May, director of marketing for network services at CompuServe, Inc. and cochairman for the event, the roundtable will include analyst presentations on how to evaluate frame relay services along with user presentations on frame relay experiences. For more information, call the forum office at (415) 941-0849.

Shiva to ease Mac remote access. Shiva Corp. this week will unveil plans for a communications server that eases remote access to Apple Computer, Inc. Macintosh-based networks.

The server, to be released in March, will be designed to centralize connections of remote users using Apple's AppleTalk Remote Access (ARA) software. Apple's ARA provides users with remote access to AppleTalk nets. Shiva's new communications server is software that resides on a dedicated Macintosh attached to a LocalTalk local-area network and allows remote users to dial in to it to gain access to the LAN. Previously, ARA users had to dial in to their own Macintosh on the network to log on to the net from a remote Macintosh.

NASD to launch global trading net. The National Association of Securities Dealers, Inc. (NASD) plans to launch on Jan. 20 Nasdaq International, an international trading network set to help NASD compete with the rival London Stock Exchange. Nasdaq International will run from 3:30 a.m. EST, when the London Stock Exchange opens, until 9 a.m., a half hour before trading starts on NASD's U.S. network. Traders in London will access the network via private lines from workstations on their premises to a local NASD node. The London node will be linked via a transatlantic, fiber-optic private line to NASD's main data center in Trumble, Conn., according to a spokesman for the exchange.

Novell to intro LAN analyzer. Novell, Inc. this week will release a new version of its LANalyzer local-area network traffic analysis tool. A noteworthy feature in Version 3.11A is the expansion of the previous version's expert system automated testing capabilities. These capabilities give net administrators a step-by-step analysis and diagnosis of network problems.

US Sprint forges ties to new union. US Sprint Communications Co. last week said it is the first U.S. carrier to offer direct dial telephone service to all 15 former republics of the now-defunct Soviet Union. US Sprint is providing service via 15 international, 64K bit/sec satellite circuits from the U.S. to St. Petersburg, Russia. From there, calls can be routed to exchanges in each of the other new states and countries. AT&T only provides direct dial-service to Moscow and Armenia. Calls routed via AT&T to other areas in the former Soviet Union require operator assistance.

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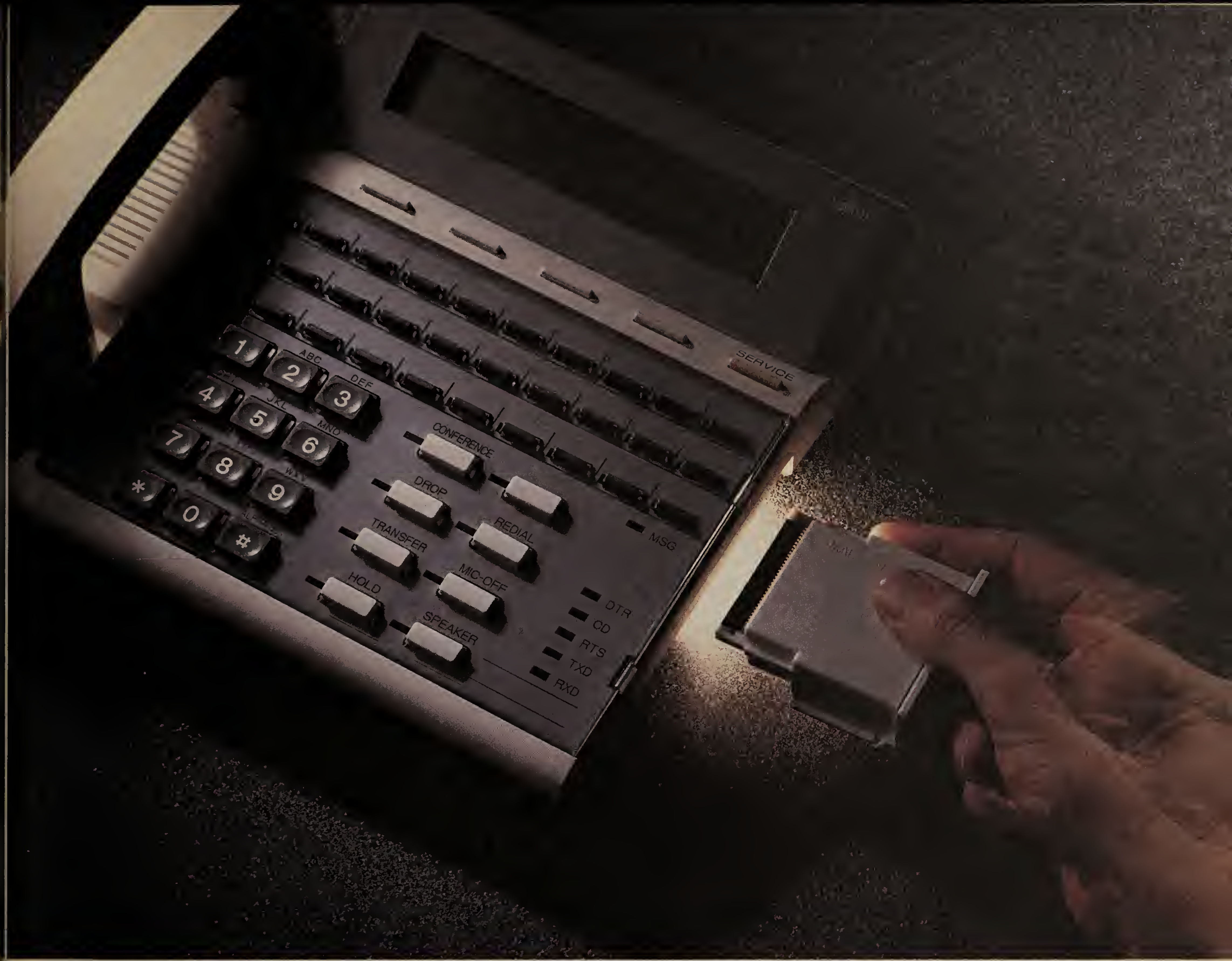

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Circle Reader Service #103

Firm preps first RISC-based PC bridge/router cards

Cards to give LAN users low-cost routing options.

By Maureen Molloy
Staff Writer

LOWELL, Mass. — Basic Networks Corp. later this month at ComNet will unveil what it claims are the industry's first Reduced Instruction Set Computer (RISC)-based multiprotocol bridge/router cards for personal computer LAN servers and workstations.

Analysts said the cards will give PC local-area network users a low-cost means of providing routing and bridging at remote sites that do not generate enough traffic to justify using a traditional router.

The devices are also an improvement over existing router add-in cards that rely on the PC's processor to handle routing and bridging functions, forcing users to dedicate the PC as a router.

"Most users simply cannot cost-justify a $6,000-plus router at their small remote sites," said Nick Lippis, principal at Strategic Networks Consulting, Inc. in Rockland, Mass. "Now for under $4,000, they can provide full routing capabilities to all end users throughout the organization."

The Ethernet/T1 Basic Router Card is a LAN adapter for Industry Standard Architecture microcomputers that comes with a RISC-based bridge/router card.

The RISC card handles the routing and bridging functions, freeing the PC or server's central processor to handle local applications or LAN services, Lippis said.

The Ethernet/T1 Basic Router Card comes with a single Ethernet LAN interface and two wide-area network interfaces that support speeds up to T-1.

The company will also unveil at ComNet a token-ring version, called The Token Ring/T1 Basic Router Card, that supports bridging and routing across both 4M and 16M bit/sec token-ring nets.

From a single PC slot in a server or DOS workstation, the bridge/routers provide LAN access at full wire speed and have a packet filtering and forwarding rate of 14K packet/sec for 64-byte packets.

Both cards will support the Transmission Control Protocol/Internet Protocol and Novell, Inc.'s Internetwork Packet Exchange (IPX). To ensure compatibility with widely installed backbone router networks from vendors such as Cisco Systems, Inc. and Wellfleet Communications, Inc., Basic Network's router cards will support the Point-to-Point Protocol, as well as frame relay and X.25 wide-area interfaces.

The Ethernet/T1 Basic Router Card will support the Spanning Tree Bridging algorithm, and the Token Ring/T1 Basic Router Card will support source routing protocol and source routing transparent protocol.

The bridge/router cards will support local and remote network management via a Simple Network Management Protocol agent.

According to Lippis, the new router cards address an area that has been neglected until now. "While the other router vendors have been interested in building the backbone router network that interconnects large sites, there haven't been router products that target small remote sites," he said.

Both cards will be priced at $3,995 each. The Ethernet/T1 Basic Router Card will be available in the second quarter of this year, while the Token Ring/T1 Basic Router Card will be available in the third quarter.

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FCC drops the ball on three proposed Tariff 12 changes

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Much like a baseball player looking in horror at a fly ball that has plopped inexplicably to the ground at his feet, the FCC realized too late last month that it had accidentally allowed changes to three Tariff 12 deals to slip through, *Network World* has learned.

Sources said the Federal Communications Commission had intended to reject proposed changes for James River Corp., Primerica Corp. and United Technologies Corp., just as it has rejected proposed alterations for 10 other users. However, due to a procedural error, which was apparently the result of miscommunications and a staffing shortage during the holidays, the agency inadvertently allowed the changes to take effect.

Realizing the error, the FCC notified AT&T on Dec. 31 that the changes to the custom network deals appeared to be unlawful and required the carrier to file documents defending the legality of the revisions. Last week, AT&T blasted the FCC's attempt to throw out the revisions, calling it "indefensible public policy."

AT&T said that over the history of Tariff 12, the FCC has routinely allowed more than 200 changes and argued that the revisions filed for the three users are no different. The carrier did not mention that the agency has routinely rejected all changes for the deals since it voted to freeze Tariff 12 offerings last August.

If the FCC finds the three changes unlawful and continues to reject other Tariff 12 revisions, users will be "substantially and irreparably harmed," AT&T said in its filing. "It will result in customers paying for services they no longer require, not being able to optimize their nets or obtain the benefits of new technology and forgoing rate reductions that AT&T is willing to grant."

But sources at the FCC said that no matter how stringently the carrier objects, the three sets of changes are doomed. The agency has consistently rejected all but the most minor changes proposed for Tariff 12 deals.

Since the first of the year, the FCC has rejected five proposed Tariff 12 revisions.

The commission cracked down on Tariff 12 changes after an August decision in which it ruled that AT&T is dominant in the 800-service market and could thus use its power to unfairly leverage sales of more competitive services. Because virtually all Tariff 12 deals contain 800 service, the FCC froze existing deals and decided that no future changes would be allowed until 800 numbers are portable.

If the FCC finds the changes for James River, Primerica and United Technologies unlawful, those users will likely be forced to go back to their original deals, even through they are currently operating under the revised tariffs. The ruling also virtually guarantees that users will not be allowed to make any significant changes to their networks in the future, including prearranged annual price reductions.

Rival carriers had filed objec-

(continued on page 46)

New architecture increases capacity of T3plus muxes

By Paul Desmond
Senior Editor

SANTA CLARA, Calif. — T3plus Networking, Inc. last week announced a new architecture for its T-3 multiplexer family that dramatically increases its capacity and offers support for meshed T-3 networks.

T3plus' new UNITYplus architecture is based on a new Intra System Matrix (ISM) module that boasts an 800M bit/sec bus, up from the current speed of 90M bit/sec. The ISM also makes it possible to switch traffic among multiple T-3s supported by a single node, a key capability in routing around failures.

UNITYplus is intended to give T3plus' BMX45 mux family the capacity required to support emerging technologies such as Synchronous Optical Network (SONET), cell relay and Switched Multimegabit Data Service (SMDS), said Alan Menezes, director of marketing for T3plus. Priority is being given to support for the 155.52M bit/sec SONET Optical Carrier (OC)-3, which is expected to be delivered sometime in 1993.

Analysts said that time frame is reasonable.

"I think the company has accurately identified the migration of the T-3 market," said Rick Malone, a principal at Vertical Systems Group, a consultancy in Dedham, Mass. "In 1992, people are just looking to put in simple T-3 networks that can migrate to more complex things over time."

The first product unveiled under the UNITYplus architecture is the BMX45N. It supports as many as 12 redundant T-3 links, with slots remaining for associated port modules, Menezes said. When SONET OC-3 modules become available, the BMX45N will support four SONET OC-3 links.

The current BMX45A and the low-end BMX45S support only two redundant T-3s. Both models are compatible with the BMX45N, which can also be used with T-1 feeder muxes from other vendors.

Also new with the BMX45N is the ability to configure the box with multiple shelves, which house the mux's CPU, ISM, trunk and port modules. The BMX45N supports as many as four 18-slot shelves, while the previous device was a single-shelf unit, Menezes said. It uses the same port modules as the previous BMX45s.

Two port modules are available. One supports four T-1 inputs, and the second, called the High Speed Data module, supports two data input ports that can be configured as V.35, RS-442/449 or High Speed Serial Interface ports that operate at up to 50M bit/sec.

Mesh net support

A key new feature for the BMX45N is support for fully meshed networks, in which all muxes can find alternative paths around failed links or nodes. The BMX45 had supported ring configurations and drop-and-insert but did not have the capacity required for meshed T-3 nets.

Malone said the added capacity and ability to support meshed networks will pit the BMX45N squarely against T-3 wares from vendors such as Network Equipment Technologies, Inc. and its Adaptive Corp. subsidiary, as well as Newbridge Networks, Inc. and Timeplex, Inc.

Richard Pospisil, president and chief executive officer of T3plus, said the company will later provide a packet-switching module to support cell relay, high-speed frame relay and SMDS. The module will include its own packet-based bus to handle local packet traffic but will also feed into the ISM, effectively creating a packet-over-circuit architecture.

Analysts gave the company high marks for its migration strategy. "It's one of the first products that addresses the transition that we think is going to take place over the next three years to broadband services, SONET and [Asynchronous Transfer Mode]," said Berge Ayvazian, vice-president of communications research at The Yankee Group, a consultancy in Boston.

The BMX45N is expected to be available next quarter. Pricing starts at $42,000 for a nonredundant configuration and $65,000 for a redundant system.

Watch *Network World's* feature pages next week for the results of an unusual test ranking the performance of leading LAN network operating systems according to work group sizes and types of applications.

Although the fastest operating system isn't necessarily the best one, speed should surely be a factor in finding the right operating system for your organization. After all, if net performance degrades under a heavy load, the efficiency of an entire work group may suffer.

So look for next week's test article. It describes a realistic examination, providing information useful for making network operating system choices to fit your organization's application mix and average work group size.

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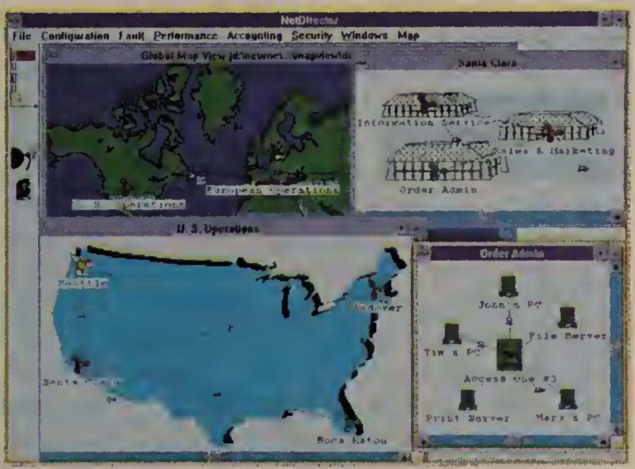

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Circle Reader Service #110

Cayman to air hub/router for LocalTalk, Ethernet

Increases control of Macintoshes on corporate net.

By Caryn Gillooly
Senior Editor

SAN FRANCISCO — In conjunction with this week's MacWorld Expo/San Francisco, Cayman Systems, Inc. is expected to unveil the industry's first combination LocalTalk-to-Ethernet hub/router.

Called the GatorStar GX, the product will meld the capabilities of a 24-port smart hub with the routing and management functions of a multiprotocol router. Combining these technologies in a single box eliminates devices — and points of failure in the network — and gives administrators more control over the Apple Computer, Inc. Macintoshes on the corporate net.

Most LocalTalk users today link Macintoshes via unshielded twisted-pair wiring into a centralized hub or repeater, which is tied to a backbone by a router.

Because the repeater is not an intelligent device, it cannot inform the administrator about the status of the nodes attached to it, said Cimarron Boozer, director of product marketing for Cayman, based in Cambridge, Mass.

With GatorStar GX, an administrator will be able to obtain data about each Macintosh. Using its port scanning capability, the product can detect malfunctioning LocalTalk nodes, disable the affected ports and then automatically bring the ports back on-line once the problem is solved.

GatorStar GX will have the same management features as Cayman's GatorBox router, including a utility called GatorKeeper, which lets administrators manage all Cayman devices from a central location; Telnet capabilities, which enable the administrator to display node statistics and restart a node remotely; and Cayman's private Simple Network Management Protocol Management Information Base (MIB), which feeds information to the GatorKeeper central management console.

In addition, the new product will work with more advanced LocalTalk management products such as Net Watchman from The AG Group, Inc. Port scanning information can be sent to a third-party product to build a graphical network map and monitor traffic.

According to Boozer, Cayman will also announce support of the SNMP MIB II and AppleTalk MIB within the next several months.

He claimed that the cost of buying a separate router from Cayman and two 12-port hubs

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Proposed federal caller ID regulation raising backles

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Users, state agencies and carriers clashed last week over which rules should govern the provision of caller ID services and whether the Federal Communications Commission should set those rules rather than the states.

Last September, the FCC proposed a set of regulations for caller identification that included a requirement that callers be allowed to block transmission of their telephone numbers. Caller ID allows a call recipient to see the caller's phone number on a device attached to the telephone.

The FCC rules would not allow callers to block delivery of their number over the automatic number identification systems used with 800 and 900 services.

Caller ID has pitted privacy advocates, law enforcement agencies and social service workers against the carriers and other technology proponents. The FCC's decision to regulate the service at the federal level also churns up ill feelings from some state regulators who say they are unnecessarily being shut out of the picture.

Many states have already taken steps to regulate caller ID but have used widely varying approaches, with some ruling out even minimum controls.

That may be one reason why the FCC has decided to step in. According to some experts, it would be virtually impossible to have a

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CLI unveils Mac desktop video

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screens and call up or send data files while conferencing.

The system operates at 112K bit/sec and requires a 2B+D ISDN Basic Rate Interface (BRI). A CLI spokeswoman said the company chose ISDN rather than switched digital services in order to hold down costs. Switched digital services would require a separate data service unit.

ISDN requirement

The Cameo 2001 will, however, require the Macintosh to be outfitted with an internal ISDN NB card, a digitizing video card, and RasterOps Corp.'s 364 or 24STV video display cards.

While the 2001 uses industry-standard ISDN for transmission, it uses a proprietary coder/decoder algorithm and does not conform to the new international codec standard, raising interoperability questions (see "New devices to boost desktop video mart," page 9).

CLI said it plans to introduce a desktop version later this year that conforms to the codec standard H.261, also called Px64, but for the Cameo 2001, it will use its proprietary Discrete Cosine Transform-based PV2 algorithm — which analysts described as a subset of the standard — in order to hold down cost and deliver good picture quality.

> "They took the easiest path to get to market," Douglas said.
>
> ▲▲▲

Scott Douglas, an analyst at Telemanagement Resources International, Inc., said, "They took the easiest path to get to market."

Some analysts said the Cameo Model 2001, priced at $2,095, is still too costly for widespread acceptance. In addition, Cameo's use of ISDN could dampen response because local ISDN links are not yet universally available.

Ajit Kapoor, an analyst with the META Group, said the desktop videoconferencing product may need a price of $500 or lower to win acceptance.

Tim McElgunn, an analyst with Datapro Research Group, pointed out that Cameo has broken the price barrier set by Harris Corp.'s Anamix personal computer-based desktop system for the IBM-standard PC. The Anamix costs $26,000 and requires T-1 access at the desktop. However, Harris concedes that it has not sold many.

In addition to a standards-based product, CLI also promised to announce other desktop models before year end. They are expected to include videoconferencing systems for IBM PCs and minicomputers, an analog model compatible with the AT&T videophone unveiled this week and a desktop system to work with a local-area network. ◘

Competition to save local loop

continued from page 1

route incoming calls across diverse paths," Kennedy said. "They do it for 800 numbers, [so] they should be able to do it for me."

Users and industry observers said they believe only the advent of competition in the local loop will push local carriers to offer the services users want and need.

"True competition in the local loop is the only thing that will [get] monopoly carriers to wake up and pay more attention to serving customer needs," said Brian Moir, legal counsel for the International Communications Association, which represents network executives from the nation's largest companies.

Fortunately for Kennedy and other users, alternative carriers, such as Teleport Communications Group, Inc., are making some headway in opening Chicago's local loop to full competition. They are being aided by a more progressive regulatory environment, led by Illinois Commerce Commission (ICC) Chairman Terrence Barnich, who recently called for downtown Chicago to become a "telecommunications trade-free zone."

Many industry observers believe Chicago will be the first city to follow New York in forcing monopoly carriers to open their networks to wider competition.

Teleport, which led the charge in New York and now has 10 miles of fiber in downtown here, last year got the green light from Illinois Bell Telephone Co. to link its Chicago net to Illinois Bell central office switches. Other alternative carriers, such as Metropolitan Fiber Systems, Inc. and Diginet Communications Inc., are pressing for interconnection agreements with Illinois Bell and Central Telephone Co. of Illinois while continuing to string fiber throughout the city.

Carrier cooperation

Cognizant of events in New York and the disastrous consequences of the 1988 Hinsdale, Ill., central office fire, Illinois Bell and other local exchange carriers have been willing to offer advanced services and cooperate with alternative carriers.

Last month, Illinois Bell and Teleport filed an agreement that outlined discussions they had concerning interconnection issues, including standards and pricing for interconnection as well as number portability.

In addition, Illinois Bell's parent, Ameritech, last month announced a pilot test of a score of advanced services that involves two large Chicago firms: Continental Bank Corp. and Osco Drug, Inc. Ameritech is testing a number of services, including flexible call forwarding, which lets companies control when and where to forward incoming calls, and call volume distribution, which enables a company to route incoming calls based on calling volume.

An Illinois Bell spokesman said Ameritech's Advanced Intelligent Network will eventually be capable of providing the Midwest Stock Exchange and other companies with redundant backup for inbound calls, although he did not specify when such a service might appear.

Diverse routing plans

Dick Vanderwoude, president of Central Telephone, said the carrier is pursuing interconnection agreements with Teleport and other alternative carriers. Also, he said the carrier has already implemented an advanced service for United Air Lines, Inc. that enables callers in either the 312 or 708 area codes to dial a single seven-digit number to reach the airline's reservation center at O'Hare International Airport in Chicago.

"It doesn't take a genius to figure out how to provide diverse routing," Vanderwoude said.

Despite all this activity in the Windy City's local loop, Kennedy says he is still out in the cold and hopes that an outage doesn't wipe out inbound calling at the Midwest Stock Exchange.

While he is encouraged by recent developments in Chicago's telecommunications market, Kennedy is frustrated that local carriers have not come forward with a satisfactory solution.

Kennedy points to a disaster recovery service recently tariffed by New York Telephone Co. as an example of what local carriers should already be providing to users ("N.Y. Tel rewrites the book for publisher," *NW,* June 10, 1991). The New York Telephone service provides diverse routing for inbound calls through separate central offices and circuits to a customer site.

"It's frustrating to know that the carriers have the technology to meet my needs but don't do it," Kennedy said. ◘

Corrections: The article "Lexcel's LAN management vision gaining momentum" *(NW,* Dec. 16, 1991) implied that SynOptics Communications, Inc. had formed an exclusive deal with Lexcel to develop net management products. SynOptics is working with Lexcel and other vendors to ensure net management interoperability.

In "ISICAD links Command system to HP's OpenView" (First Look, *NW,* Dec. 30/Jan. 6), the availability date of the link module was incorrect. The module is currently shipping.

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

"The economic uncertainty in the U.S. means that companies almost have to diversify geographically. The last thing I would do is put all my chips in one place."

Scott McNealy
Chairman
Sun Microsystems, Inc.,
which derives half of its
revenue from overseas.

People & Positions

Tom Evslin last week joined **Microsoft Corp.**'s Microsoft Workgroup Canada division to oversee development of Microsoft Mail and help direct Microsoft's messaging and work group strategy. He has not been given an official title yet.

Previously, Evslin served as chairman and chief executive officer of Solutions, Inc.

Bob Hunt last week was named vice-president of the government region for **Network Management, Inc.**, a systems integration firm.

Hunt, who was previously director of sales at US Sprint Communications Co., will oversee the company's network management programs for the civilian and defense sectors.

He replaces **Carl Patrick**, who has been appointed vice-president of the Southeastern region for Network Management.

Tivoli Systems, Inc., an Austin, Texas, software start-up, last week named **John Hime** as its new vice-president of marketing.

Hime will be responsible for all marketing activities at the company, whose first product, WizDOM, is used to manage distributed Unix-based computer systems.

Previously, Hime was vice-president of systems marketing for MIPS Computer Systems, Inc. ◻

Internet Society to guide research network's future

Nonprofit group offers industry more say in net.

By Bob Brown
Senior Editor

RESTON, Va. — This month marks the start-up of a new organization designed to further the evolution of the Internet as a research vehicle and a forum for testing new network applications.

The Internet Society is a nonprofit group designed to give users and vendors a greater say in the development of the Internet. Group members will exchange information via a newsletter, journal, annual meeting and, of course, electronically over the Internet.

The Internet Society has already attracted about 900 individual members and a handful of corporate members, including Apple Computer, Inc., IBM and 3Com Corp.

The Internet is a family of 5,000 interconnected networks, including such regional nets as the Bay Area Regional Network and the New York State Educational Research Network. It is used by an estimated three million people.

The network has experienced some major changes of late, including the upgrade of its backbone from T-1 to T-3 speed and an upsurge in the amount of commercial business traffic.

These changes spawned the need for creation of the Internet Society, which grew out of discussions among representatives from several organizations with heavy Internet users. Those groups include the Corporation for National Research Initiatives and Educom as well as Rare, a European academic network organization.

Providing support

The Internet Society will not be involved in running the Internet, but it will provide support to those individuals and organizations running and using the huge internetwork, said Michael Roberts, vice-president for networking at Educom in Washington, D.C.

The Internet Activities Board — which is overseeing development of multiprotocol networking for the Internet under advisement from the Internet Engineering and Research Task Forces — will be merged into the Internet Society, Roberts said. Details of this arrangement have not been finalized.

3Com, a Santa Clara, Calif., maker of data networking equipment, became the Internet Soci-

(continued on page 10)

INDUSTRY BRIEFS

Start-up announces funding. Cooperative Solutions, Inc., a San Jose, Calif., client/server software start-up, last week announced completion of its third round of financing, which raised $15.9 million.

The company raised $4 million in its first round of financing and $9 million in its second round.

Cooperative Solutions, which markets a client/server transaction processing software package dubbed Ellipse, will use the funds to expand its sales, customer service and support activities. It will also use the money to bolster its European operations.

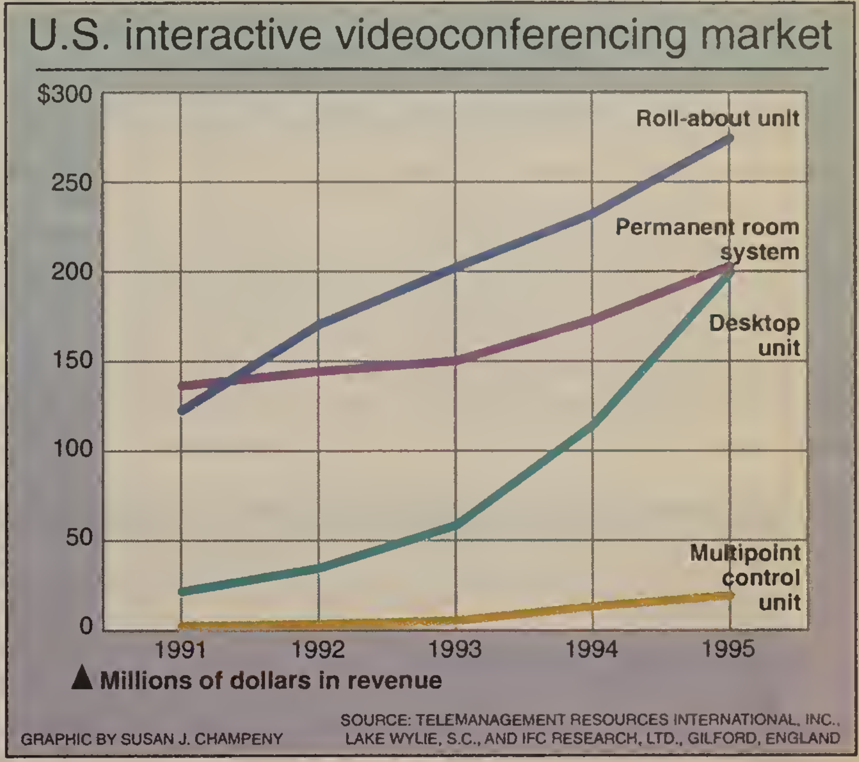
Novell, Inc., which was among the group of investors, unveiled a joint development agreement with Cooperative Solutions under which Ellipse will be ported to Novell's NetWare.

Ellipse is expected to be available later this quarter for NetWare users with DOS Windows or OS/2 clients using NetWare Named Pipes requester technology. A native NetWare implementation is expected in the future.

SynOptics creates support program. SynOptics Communications, Inc. last week announced a new customer support program to address the growing complexity of user networks.

Value-added resellers have to qualify for SynOptics' Authorized Customer Support Partner Program by meeting strict

(continued on page 10)


U.S. interactive videoconferencing market

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: TELEMANAGEMENT RESOURCES INTERNATIONAL, INC., LAKE WYLIE, S.C., AND IFC RESEARCH, LTD., GILFORD, ENGLAND

New devices to boost desktop video mart

But users still facing technical hurdles in real-time videoconferencing on packet-oriented LANs.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — While small today, the desktop videoconferencing market is expected to get a boost this year from the introduction of stand-alone desktop video systems and computer-based videophones.

This week, Compression Labs, Inc. (CLI) is set to announce a desktop system that will enable an Apple Computer, Inc. Macintosh to serve as a videoconferencing system. PictureTel Corp., working with IBM, plans to announce a similar product for IBM Personal System/2s by the middle of the year.

But vendors acknowledge that desktop videoconferencing, which offers users an option beyond dedicated videoconferencing rooms and roll-about systems, will also usher in new problems related to delivering real-time voice and image over local-area networks.

Three-pronged market

According to analysts at Telemanagement Resources International, Inc. (TRI), the desktop market encompasses three basic types of products — videophone handsets, stand-alone desktop video systems and coder/decoder board systems that can be added to personal computers externally or internally.

AT&T's VideoPhone 2500, unveiled last week, is a videophone handset that uses a codec developed by CLI. The VideoPhone 2500 looks like a standard phone with a 3.3-in. video monitor and is the first videoconferencing system that can operate over a 19.2K bit/sec line.

AT&T officials acknowledge that VideoPhone 2500 is positioned as a consumer item, adding that the company is working on PC-based systems as well as videophones that can operate with private branch exchanges for the business market.

Scott Douglas, managing director at TRI, said a survey of corporate managers conducted by his company showed that businesses overwhelmingly prefer PC-based desktop systems that work hand-in-hand with their graphical user interfaces, such as Microsoft Corp. Windows.

The CLI Cameo Personal Video System Model 2001, promised for delivery this spring, will allow users to view graphics or data files while they are engaged in interactive videoconferencing using windows on their Macintosh screen.

Other vendors, including Digital Equipment Corp., British Telecom International, Inc., GPT Video Systems and PictureTel Corp., are developing similar systems.

But vendors acknowledge that the real-time network requirements of videoconferencing will not easily mesh with packet-oriented LANs.

In fact, the first PC-based videoconferencing systems from CLI, British Telecom and PictureTel will require ISDN or switched digital service access for each computer.

Rich Baker, director of re-

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Society to guide network's future

continued from page 9

ety's first member late last year.

One reason 3Com joined the Internet Society as a founding member is because it wants a voice in how the Internet will be used for research and development, said John Pickens, 3Com's director of common software and architecture as well as the company's liaison to the professional organization.

"The value of [us] joining the Internet Society lies in the advancement of research and development in the long range as opposed to anything that will affect the next release of a product," Pickens said.

The Internet Society will serve as a forum for discussions on new network applications based on Open Systems Interconnection protocols, network security and the internetwork's increased usage for commercial purposes, among other things.

The Internet Society will hold its first annual meeting June 15-18 in Kobe, Japan.

The fee for individual members to join the Internet Society is $70, while corporate membership dues are $10,000 a year. Corporate members can become founding members by agreeing to sign up for at least a two-year membership.

For more information, contact the Internet Society at 1895 Preston White Drive, Suite 100, Reston, Va. 22091. ◼

New devices to boost desktop video mart

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search at PictureTel, said individual telephony connections will be required to support desktop videoconferencing because users will not be tolerant of the delays inherent in most LANs. LANs may not have the necessary throughput, or they may introduce time delays — known as latency — in delivering bits, Baker explained.

"Protocols on most LANs don't guarantee getting packets through on a timely basis. It's a messy problem, but it's a key issue in desktop communications," he said.

A new standard for interoperability of videoconferencing systems, Px64, itself presents network problems. "The protocol assumes there is one clock in the world for sending bits. As soon as you put a packet network in between, you lack synchronization," he said.

Baker asserted that real-time videoconferencing would require a state-of-the-art LAN internetwork Fiber Distributed Data Interface and the latest generation of intelligent hubs. "The intelligent hubs coming out are capable of [supporting] that," he said. "These minimize latency and heighten throughput."

Graham Mills, British Telecom's manager of business development for visual business services, agreed that most LANs today would not be very good at supporting PC-based videoconferencing.

"It will be three years before real-time services can run over LANs," Mills predicted. However, CLI is expected to announce plans for a LAN-based desktop system within a year.

Ajit Kapoor, an analyst with Westport, Conn.-based META Group, said the videoconferencing industry is looking to the IEEE standards body for relief on the LAN problem.

The IEEE 802.9 committee is developing a standard to handle interactive image over a LAN, but the IEEE draft proposal is not expected until 1993, Kapoor said. He noted that users are not likely to want to purchase proprietary products for their LANs.

"A lot of people will not be able to do LAN-based videoconferencing for a long time," Kapoor concluded. ◼

Industry Briefs

continued from page 9

criteria that includes provision of a support hot line, heavy investment in ongoing technical training of their engineers and guaranteed on-site response times.

In return, SynOptics will provide the resellers with such help as telephone support, as well as service leads and on-line access to a technical bulletin board service, among other things.

Charter members of the Authorized Customer Support Partner Program are: Arcom Electronics, Clover Communications, Inc., DiLAN, GTE Customer Networks and Hi-Tech Connections, Inc.

Orion secures funding. Orion Satellite Corp. last week announced the formation of an international partnership to support its efforts to enter the global very small aperture terminal market.

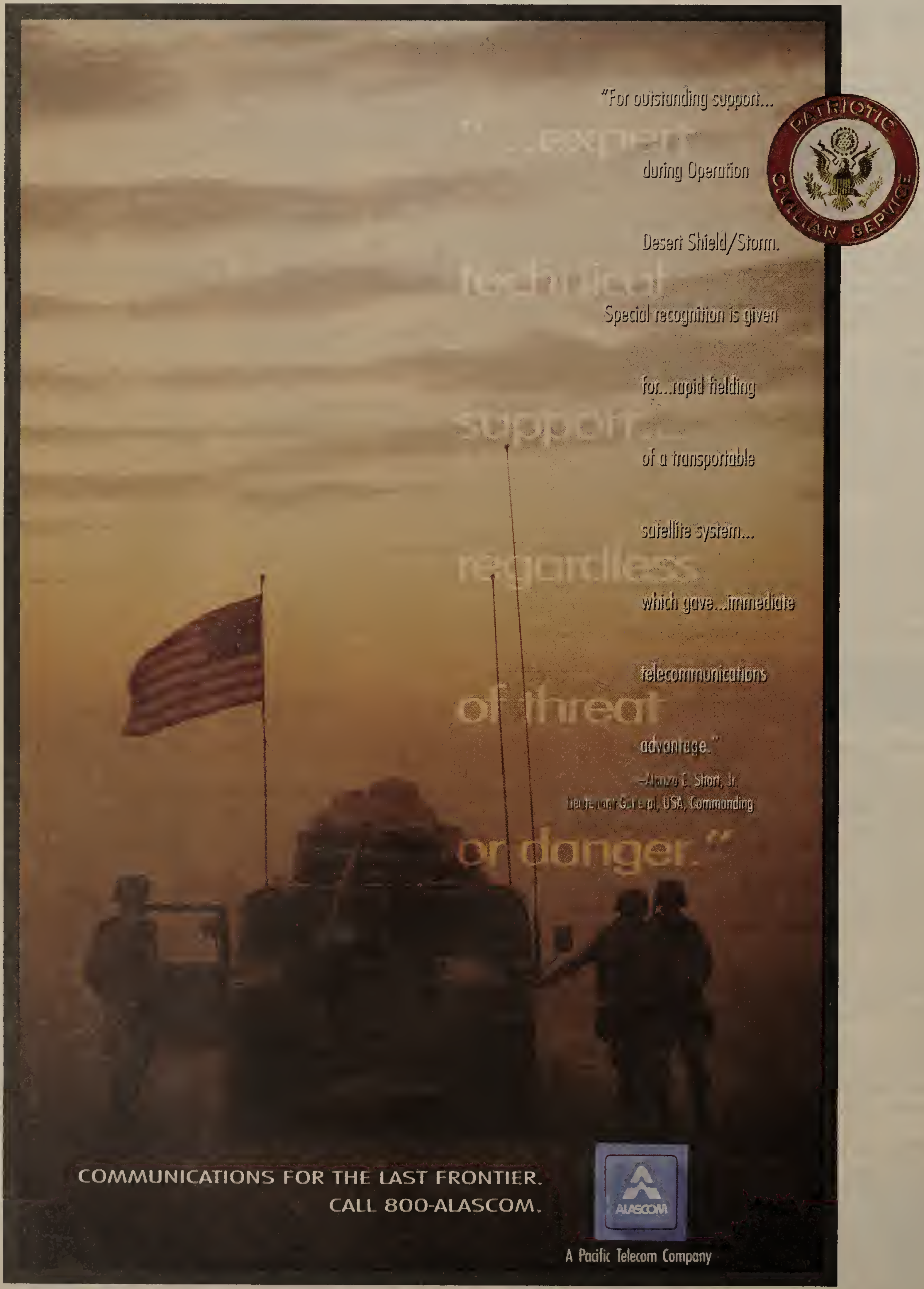
Orion Network Systems, Inc., the parent of Rockville, Md.-based Orion Satellite, is joined in the International Private Satellite Partners program by British Aerospace PLC, COM DEV, General Dynamics Corp., Kingston Communications PLC, Matra Group, Nissho Iwai Corp. and STET.

The partnership will provide both financial backing and marketing presence for Orion Satellite.

Based on the limited partners' support for Orion Satellite, an international syndicate of banks has also agreed to lend the partnership $400 million to help in the venture.

British Aerospace will be the prime contractor responsible for launching a satellite over North America and another over Europe to support Orion Satellite's network.

The first Ku-band satellite is expected to be launched in 1995. ◼



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Circle Reader Service #113

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

Southwestern Bell Corp. last week said that because of events at the Houston Astrodome, it will have only two weeks to install 8,000 phone lines for the Republican National Convention to be held at the indoor facility in August. The telephone company has dedicated a new prefix, 737, to the convention.

Carrier Watch

US Sprint Communications Co. last week announced plans to reduce intrastate long-distance rates in California by 10% beginning Feb. 1 as it passes access rate reductions on to its customers.

Since January 1991, US Sprint has reduced intrastate rates in California by about 19%. With this latest reduction, US Sprint's California intrastate evening/night/weekend plan will drop from $7.05 for the first hour to $6.30. Additional hours will be reduced from $6.25 to $5.65. Daytime callers will receive a 10% discount.

US West Communications, Inc. recently announced it has received a lease for private branch exchanges and wide-area network services from the General Services Administration.

Under terms of the 10-year lease, which is valued at $30.4 million, US West Communications will provide 30 GSA sites in the states of Arizona, Idaho, Oregon and Washington with Northern Telecom, Inc. Meridian 1 PBXs, as well as voice, data and enhanced services.

US West will use 16,000 Integrated Services Digital Network Primary Rate Interface connections to link the 30 GSA sites to the Federal Telecommunications Systems 2000 network. ☑

National ISDN 1 gets boost from Pacific Bell support

Carrier to upgrade switches to support standard.

By Bob Wallace
Senior Editor

SAN FRANCISCO — Pacific Bell recently detailed plans to upgrade high-end central office switches throughout California with software that supports National ISDN 1 in a strong show of support for the emerging standard.

Beginning in early 1993, Pacific Bell will upgrade all Northern Telecom, Inc. DMS-100 and AT&T Network Systems Group 5ESS central office switches in California with the software in an effort to accelerate deployment of standard Integrated Services Digital Network.

Pacific Bell got the ball rolling by signing an agreement with Northern Telecom for National ISDN 1-compliant software for its DMS-100 switches scattered throughout the state.

The emerging National ISDN 1 standard is a collection of Bell Communications Research technical references that define how customer premises equipment accesses an ISDN switch and how different vendors' switches interoperate using a Common Channel Signaling System 7 network.

By comparison, existing ISDN standards allow for broad interpretation, leading to a mix of systems and equipment that are unable to communicate.

Users applauded news of the contract for National ISDN 1 software.

"With National ISDN 1, we'll know that we can move equipment and applications from one site to another," said Jim Jacobson, ISDN product manager for Jet Propulsion Laboratory in Pasadena, Calif. "We won't have to worry about which switch serves which locations."

Pacific Bell's contract is the second major show of support for National ISDN 1 by a telephone company in recent months.

In November, Ameritech announced plans to buy 276 central office switches and upgrades for its existing switches from AT&T, Northern Telecom and Siemens Stromberg-Carlson. All the switches are to be equipped with National ISDN 1 software ("Ameritech orders switches supporting National ISDN 1," *NW*, Nov. 18, 1991).

Pacific Bell's contract with Northern Telecom calls for the telephone company to order 112 ISDN modules over the next six years. The carrier has yet to decide which switches will be equipped with the National ISDN

(continued on page 14)

WASHINGTON UPDATE

BY ANITA TAFF

AT&T plans upgrades in response to outage. AT&T told the Federal Communications Commission that it is beginning to upgrade 359 power plants at central offices across the country in an effort to prevent a repeat of an embarrassing electrical failure in New York that knocked out telephone service to much of the city last year.

AT&T has already explained to the FCC the steps it is taking to upgrade electrical generation and alarm equipment at 32 central offices similar to the New York office that lost power. Last week, the carrier outlined in a report to the FCC how it will modernize 359 power plants at 132 central offices housing 4ESS switches across the country. Central offices often contain more than one power plant.

AT&T told the FCC that it intends to spend $600 million during 1992 and 1993 to improve network reliability and that $150 million of that figure will be used for power equipment. Additionally, AT&T said it will spend between $20 million and $30 million more on maintenance of power equipment associated with 4ESS switches.

Besides upgrading electric generation equipment, AT&T said it is reviewing and beefing up alarm systems that alert personnel when power outages occur. The carrier is attempting to ensure that all central offices have alarm systems that are monitored remotely and evaluating new personal computer-based alarm systems. ☑

1991 outages spur calls for reporting requirements

Cause	Date	Location	Impact
Fiber cut	Jan. 4	New York metro area	● 6 million homes without long-distance service ● New York Mercantile Exchange and New York Commodity Exchange shut down
SS7 failure	June 10	California	● 2 million homes without phone service
	June 26	Baltimore	● 10 million homes in 4 states without phone service ● U.S. government phones affected
Switch failure		California	● 3 million homes without phone service
	June 26	South Carolina	● 150,000 homes without phone service
SS7 failure	July 2	Pennsylvania	● 1 million homes without phone service
Power failure	Sept. 17	New York metro area	● 2 million homes without long-distance service ● 3 major New York airports close for 6 hours
Fiber cut	Sept. 23	Miami	● Miami International Airport closes

SS7 = Signaling System 7

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: REP. BOB WISE (D - W. VA.)

Carriers bemoan FCC outage report plan

But users fight back, claiming the proposed rules for reporting outages are too broad and lenient.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Carrier efforts to get the FCC to water down its proposal requiring them to report network outages has met with vehement opposition from users arguing that the commission's rules are too lenient in the first place.

The Federal Communications Commission has proposed that carriers must report within 90 minutes any outage affecting 50,000 customers or circuits for 30 minutes or more.

In comments filed with the FCC late last year, carriers said the requirements were too burdensome and asked the agency to relax some of the rules. In particular, the carriers want the FCC to raise the cutoff for reporting outages, exempt nondominant carriers and keep some portions of the reports confidential.

Users, however, claim that the proposed requirements fail to go far enough in protecting users and urged the agency to bolster the rules. They say the proposed rules are so broad that they would fail to detect most outages and loosening the rules would completely undermine the outage reporting effort.

To highlight its complaints, the Tele-Communications Association, Inc. (TCA), a user group with members primarily in the Western U.S., conducted a study of all outages in the second quarter of last year.

The group identified 331 outages that lasted longer than two minutes each and, combined, affected 3.5 million lines for an average of 45 minutes. Only one of those outages would have been reported publicly under the FCC's proposed rules.

"Any outage, no mater how short, is significant from the user's perspective," the TCA told the commission.

The FCC was prompted to propose the reporting requirements after a series of major outages in local and long-distance networks last year left millions of users without service.

Pressure for carriers

It is hoped that the outage reports will put pressure on carriers to improve network quality because users will be able to obtain information about carriers with poor service records. The reports will also provide other carriers with information on outages that may be useful in preventing future network problems.

In its recent filing at the FCC, the TCA reiterated that members of the user group want to see stricter rules for reporting outages. "Notwithstanding the compelling need to expand the outage notification proposal, several carriers propose to modify it in ways that would eviscerate the disclosure requirement altogether," the TCA stated in its filing.

Three other user groups —

(continued on page 14)

Why your next
should be a

By now, you're probably aware that an Apple® Macintosh® personal computer was designed from the very first chip to work the same, intuitive way that you do.

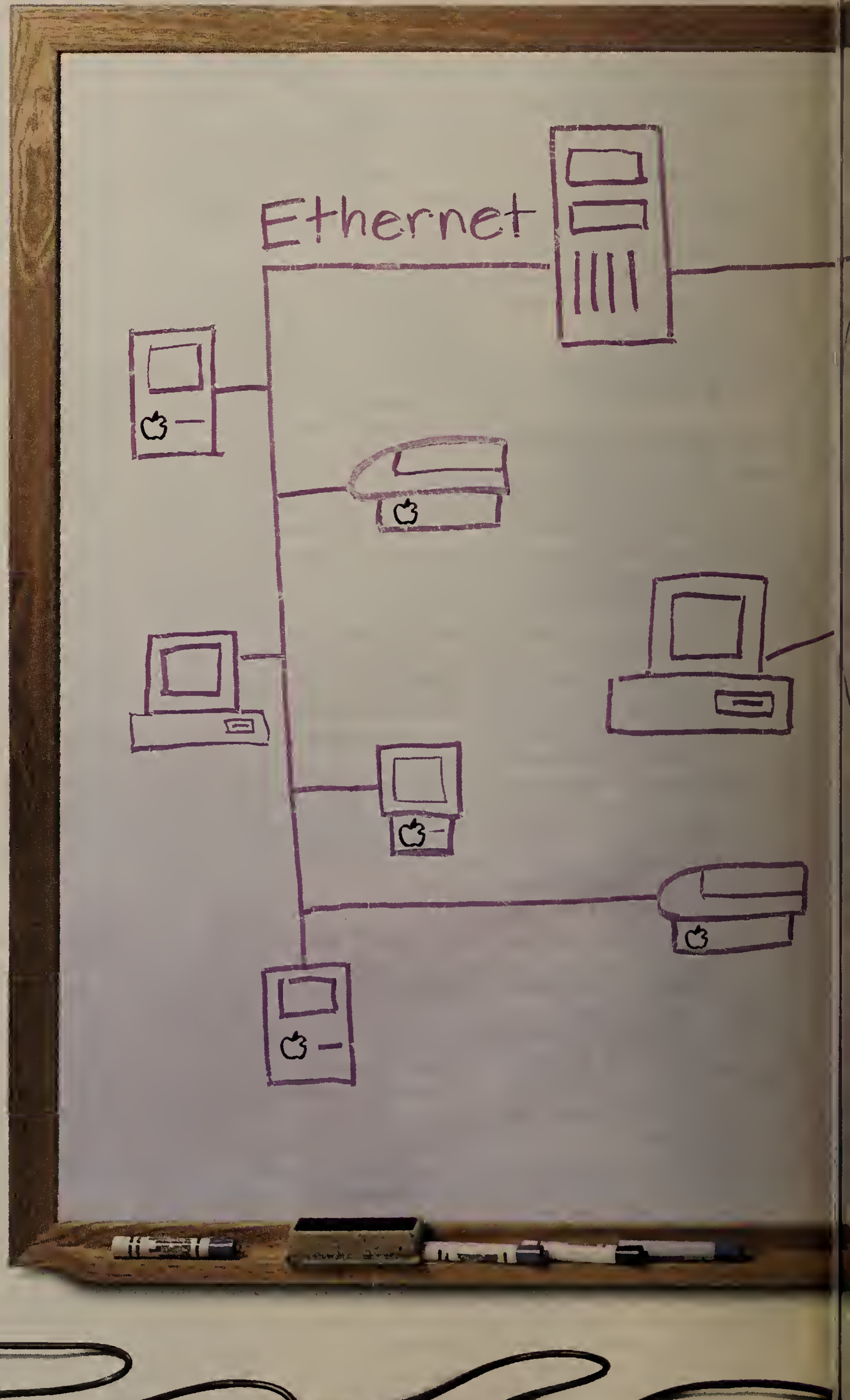
What you may not know, however, is that a Macintosh was also designed to work with other personal computers. Including the MS-DOS PCs you already own.

As a matter of fact, Macintosh is the only family of personal computers to offer built-in networking and file sharing capabilities as standard equipment.

You can use a Macintosh to access almost any mainframe, minicomputer or workstation. Including IBM, DEC, Hewlett-Packard, Prime, Cray and Sun.

You can also access resources such as network file servers and mainframe sessions simultaneously. And then cut, paste and move files between them. (Try doing that on an ordinary DOS computer.)

You can even easily connect a Macintosh with any



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Disaster recovery group expects more members as outages mount

By Bob Wallace
Senior Editor

SHREWSBURY, Mass. — The International Disaster Recovery Association (IDRA) hopes that the recent rash of carrier service interruptions will heighten user interest in contingency planning and boost the fledgling group's membership.

Formed in mid-1991, IDRA is a nonprofit organization that includes network managers interested in disaster recovery and companies that provide backup products and services.

"We created IDRA to bring users together and provide them an opportunity for education on disaster recovery," said Lyle Cooper, IDRA's membership services director. "The combination of experienced users, consultants and vendors can provide this."

IDRA members include Farmstead Telephone Group, Inc., Paul F. Kirvan & Associates, Lawrence General Hospital, Southwestern Bell Corp.'s Metromedia Paging Services unit, SunGard Recovery Services, Inc. and US Sprint Communications Co.

Ben Tartaglia, IDRA's executive director, said that interest in the group from companies in the Western half of the country is so high that the group will hold one meeting on each coast this year. The IDRA held its first meeting in October in Springfield, Mass.

While that meeting drew 50 attendees, Tartaglia said growing interest in disaster recovery and first-time mailings to telecommunications user groups could triple that figure. "This is the year in which we build IDRA's membership," he added.

Topics slated for IDRA's meeting in Philadelphia April 5-7 include emerging trends in disaster recovery, local-area networks and disaster recovery and long-distance carrier diversity.

The meeting will feature a single track of sessions that will include two panel sessions, one comprising users who will discuss their experiences with disaster recovery and a second comprising users, vendors and consultants who will answer attendees' questions on disaster recovery.

Tartaglia said a survey of IDRA members showed that the frequency and severity of service outages in 1991 has raised awareness within companies of the need for a comprehensive disaster recovery plan.

"Disaster recovery plans used to be things that were only put together by banks, which were required to do so by law," Tartaglia said. "But after all the outages last year, more companies are beginning to put detailed plans together."

The IDRA survey showed that companies have support from top management in their efforts to develop disaster recovery blueprints. It also showed that these plans have not yet been integrated with companies' overall disaster recovery plans.

"Disaster recovery plans for data operations have been around for a while," Tartaglia said. "But many companies have just recently developed telecom disaster recovery plans. So it may be some time before the two are integrated." ◘

Long-distance carriers expand state coverage

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Although the total number of long-distance carriers serving the U.S. declined slightly in 1991, a record number of providers have branched out to serve multiple states, according to a report from the FCC.

In the annual report on long-distance carriers, the Federal Communications Commission's Industry Analysis Division indicated that there are 62 long-distance carriers in the U.S. that serve four or more states. That number is up from 58 carriers at the end of 1990.

The FCC's report, which is compiled from local carrier reports of interstate access purchases, shows that 39 carriers, the majority of providers, serve between four and 11 states. Another 15 carriers serve between 12 and 24 states.

The FCC compiles figures quarterly on shifts in the long-distance arena. The report includes the District of Columbia and all states except Alaska, which is served by local carriers that do not report data to the FCC.

All together, 441 long-distance carriers purchased switched access services from local providers in 1991, compared to 448 long-distance carriers in 1990. Of those carriers, 306 purchased equal access services, the high-quality lines equivalent to what AT&T purchases.

The FCC's report also showed that more end users purchased access services for private networks than ever before during 1991.

Although an increasing number of long-distance carriers are serving a greater number of states, availability of multiple service providers is unevenly distributed across the country.

Texas had the highest number of long-distance providers with 142. California followed with 89 long-distance carriers, and New York and Illinois tied for third place with 82 carriers each.

Hawaii was served by 13 long-distance carriers, the lowest number in the nation. ◘

Carriers bemoan FCC outage report plan

continued from page 11

the California Bankers Clearing House Association (CBCHA), the New York Clearing House Association (NYCHA) and the Securities Industry Association (SIA) — agreed that the FCC should ignore requests to weaken reporting rules.

"Several of the suggested revisions would subvert the utility of the proposed rules," the three groups said in a joint filing.

Despite the FCC proposal for carriers to report major outages lasting 30 minutes, several carriers — including Bell Atlantic Corp., BellSouth Corp. and MCI Communications Corp. — said they should not have to report any outage lasting less than an hour. They pointed out that a one-hour reporting requirement would be consistent with the standard adopted by the International Telecommunications Union, an international standards body, for outages of Signaling System 7.

The TCA proposed that the FCC strengthen its rules by requiring carriers to report within 90 minutes all outages affecting more than 5,000 customers for longer than 20 minutes and that they report within 24 hours all outages affecting more than 1,000 customers for longer than 10 minutes.

"MCI and the other carriers seeking a later threshold for disclosure ignores the serious impact of even a brief outage on users," the TCA said. "If MCI's suggestion was adopted, then the FCC, other carriers and customers would be deprived of information that could be important in avoiding future disruptions of any length."

The three financial groups — CBCHA, NYCHA and SIA — said they support TCA's effort to expand the FCC reporting requirements, although they did not suggest any specific time cutoffs.

"We believe the commission should err on the side of a lower [reporting] threshold; the reporting burden is not heavy, and the requirement can always be adjusted if

National ISDN 1 gets boost from PacBell

continued from page 11

1-compliant software first.

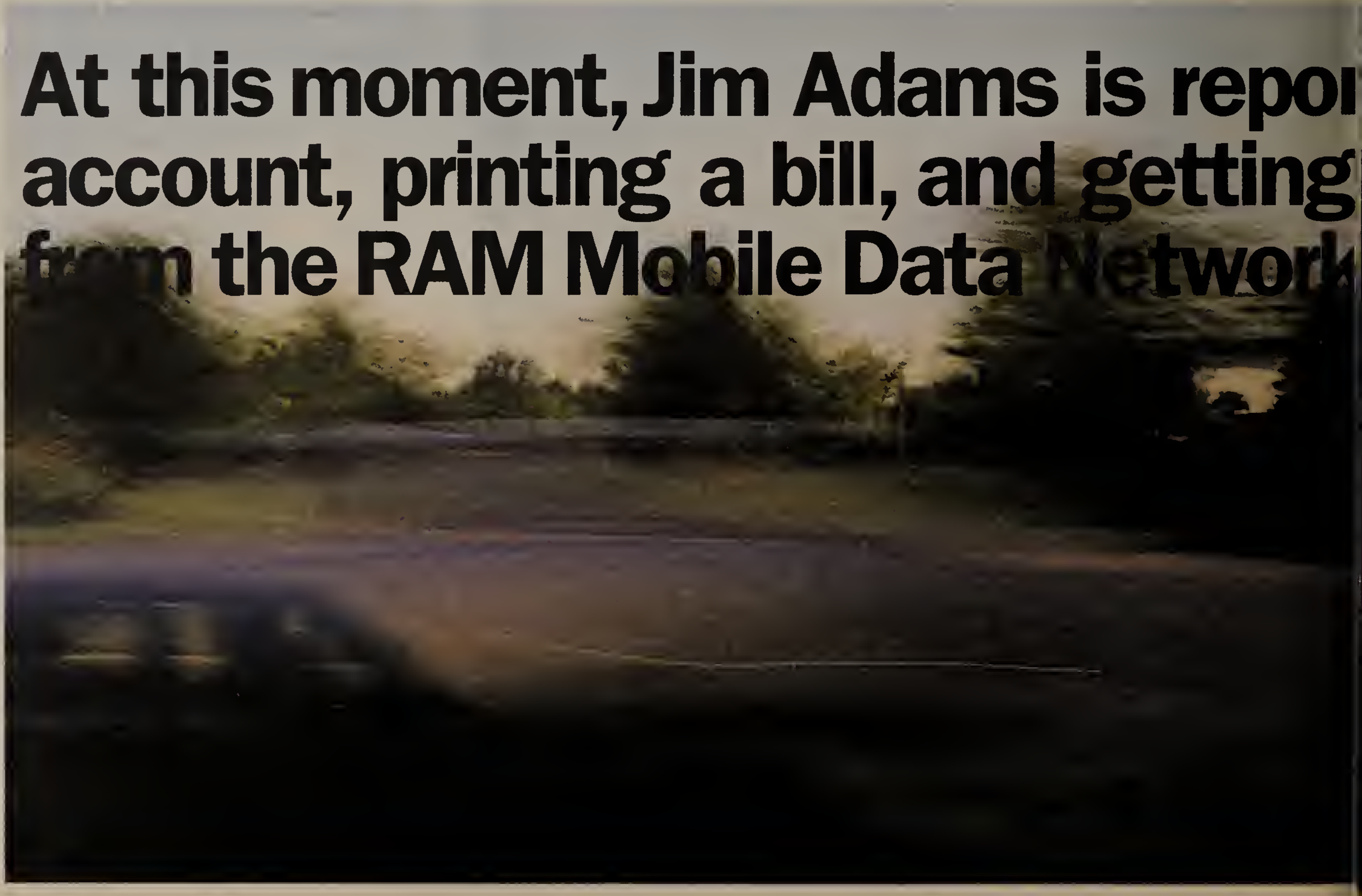
When the project is completed, the switches will make National ISDN 1 service available to 2.5 million business and residential users, said Jack Hancock, executive vice-president for Pacific Bell's product and technology support group.

Wayne Purves, Pacific Bell's ISDN product manager, said his company is negotiating a similar contract with AT&T for National ISDN 1 software upgrades for its 5ESS central office switches and hopes to finalize an agreement in the first quarter of this year.

Today, roughly 35% of Pacific Bell's 650 network switches are either Northern Telecom DMS-100s or AT&T 5ESSs, Purves said. The remainder are older switches that cannot be equipped to support ISDN.

The company, which hopes deployment of National ISDN 1 will boost use of ISDN, currently offers ISDN Basic Rate Interface (BRI) and Primary Rate Interface services from 85 network switches.

Pacific Bell has 88 ISDN customers representing about 3,740 ISDN lines. All but a handful of the lines are BRI links, Purves said. ◘


At this moment, Jim Adams is repo
account, printing a bill, and getting
from the RAM Mobile Data Networ

experience warrants [it]," the three groups stated.

The groups went even further than the TCA in one area by asking the FCC to require reports on network problems, even if they don't result in service outages to customers. They claim that problems arising in predeployment testing of equipment and software could be useful in alerting other carriers to problems "that may be lurking in their networks."

Only Nynex Corp. supported reporting nonoutage problems but suggested providing information through industry forums rather than formal reports to the FCC.

Shielding information

In addition to the sharp criticism of reporting parameters, users also blasted carriers for asking the FCC to shield some information in the outage reports from public disclosure.

"Most carriers were vague about whether or how outage reports should be disseminated," the CBCHA, NYCHA and SIA stated. "Sharing 'within the telephone industry' or dissemination to 'industry players' offers customers little comfort that the information will be put to its intended use."

The TCA was also critical of AT&T, which asked for the chance to seek confidential treatment of outages causes, the method of restoring services and steps taken to prevent recurrences. Southwestern Bell Corp., which asked that all information in outage reports be kept confidential, also incurred the TCA's wrath.

"Based on a vague allegation of potential competitive harm, AT&T would deprive other carriers and end users of the very information that makes the reports valuable," the TCA stated in its filing.

"Confidentiality would preclude the real benefits produced by exposing the causes of outages to public scrutiny; such exposure will created positive incentives to avoid embarrassing human error and will afford users information that is eminently valuable in selecting a service provider," the group said. ◪

Customer with autodialer forces Honda to shut down service lines

Carmaker seeks legal retribution for three-week disruption.

By Barton Crockett
Senior Editor

BOSTON — American Honda Motor Company, Inc. last week went to court with a lawsuit against a customer who allegedly became so upset with the car company that he used an autodialer to tie up three toll-free numbers that Honda uses for customer service, financial operations and facsimiles.

In an affidavit filed in U.S. District Court here, Paul Espinosa, Honda consumer affairs manager, said Daniel Gregory of Holliston, Mass., made so many calls and sent so many faxes to the company's headquarters in Torrance, Calif., that usual business operations were disrupted.

As a result, the car company was forced to have AT&T block all calls to Honda's toll-free numbers from the 508 area code, which serves central and eastern Massachusetts.

Espinosa said AT&T began blocking the calls Dec. 11, 1991. Service was out for more than three weeks, according to Bill Willen, an attorney for Honda.

Honda filed for a restraining order to keep Gregory from harassing the company. It is also seeking compensation for damage to its business operations.

"This is obviously something you don't like to do," Willen said. "But for [Gregory] to take his aggression out on our employees just isn't right."

Gregory, who has an unlisted telephone number, could not be contacted by press time.

According to Espinosa's affidavit, Gregory complained in November 1991 that the tires on his 1990 Honda CRX did not stop properly in the rain. Espinosa said Honda inspected the tires and found them to be in proper condition.

On Dec. 10, Espinosa said Gregory made more than 100 phone calls to Honda's toll-free customer service telephone line. On Dec. 11, Espinosa said Gregory began repeatedly calling a toll-free number for American Honda Finance Co.

According to Willen, Gregory apparently used an autodialer to make the calls, even though Honda asked Holliston police to tell Gregory to stop doing so. From Dec. 12-14, Gregory tied up the company's toll-free fax number with repeated multipage faxes, the company alleged.

On Dec. 11, the car company asked AT&T to block all calls to the finance company number from the 508 area code. And on Dec. 16, Honda asked AT&T to block all calls from the 508 area code to all three toll-free numbers.

Willen said AT&T could not block calls just from Gregory's telephone, so instead, it had to block calls from the entire 508 area code. He added that he has never before seen a consumer harass a vendor with an autodialer. ◪

AT&T offers protection against fraudulent SDN calling card use

By Daniel Briere
Contributing Editor

BASKING RIDGE, N.J. — AT&T last week unveiled the SDN Card Guarantee to protect customers against fraudulent use or employee abuse of Software-Defined Network service calling cards.

The guarantee places an upper limit on liability exposure per calling card, whereas in the past, customers had been 100% responsible for card misuse.

The guarantee will only be available to firms using the AT&T Network Remote Access Option (NRA) II when it is launched in the second quarter. NRA enables callers to use an 800 number or a zero-plus number to remotely access their company's SDN. Customers wishing to choose their own authorization codes under Option I will not be covered, although plans are underway to extend this functionality to that segment.

AT&T already protects SDN calling card customers from hackers or use of stolen codes by using an intricate series of checks when the call is placed. Among other things, the system checks for repeated ineffective call attempts from the same telephone number as well as from known hacker locations.

However, all the carriers have a problem identifying calls that appear legitimate. Under the current tariffs, for example, if an employee loses a card and does not call AT&T to tell them about it, the company will be responsible for usage of that card. The same is true if an employee runs up a bill. MCI Communications Corp. and US Sprint Communications Co. have similar policies with their Virtual Network and Virtual Private Network services, respectively.

Under the SDN Card Guarantee, a company assigns a monthly dollar amount of usage permissible. Should any usage on a particular code exceed that amount for that card, the code is deactivated.

Pricing for the Card Guarantee feature has not been determined yet but will vary by the number of cards covered. AT&T said it expects the monthly costs to be under $1 per card for the average size SDN customer with 5,000 to 10,000 cards.

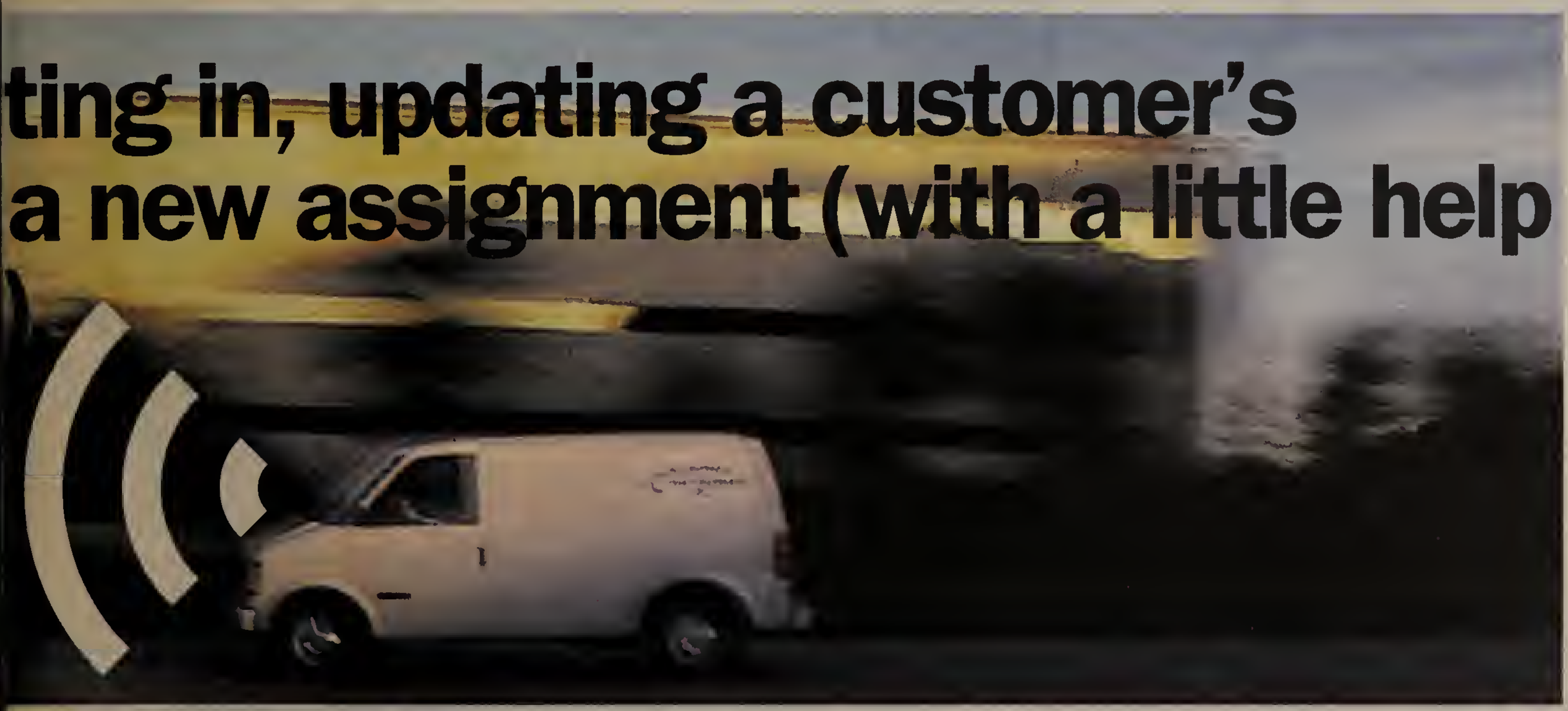
This is the first functionality that AT&T has brought to market using a recently developed network capability enabling real-time rating of calling over a customer's SDN. Within five minutes after an NRA II call is completed, AT&T has rated and recorded that call in the customer's database.

The calls are priced at the applicable SDN base rate, taking into account the time of day and mileage of the call as well as the customer's SDN discount plan.

"We're combining the monitoring capabilities of the network operations center with the fraud control offered by our Fraud Control Center in Lisle, Ill.," said Glenn Starr, AT&T's division manager for SDN.

The real-time rating capability will appear in a number of product announcements later this year. While AT&T has not disclosed specifics of new features under development, the technology may make it possible for end users to set up telecommunications budgets for certain departments and have audible tones during the call to let users know when the threshold has been exceeded.

Customers with telemarketing operations could better manage resources by being able to track the cost of the calls made, as opposed to just the number of calls or number of minutes involved. ◪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The V.3242i automatically senses the speed of the remote modem it's connected to and adjusts to that speed. It has auto-dial and auto-answer capability for synchronous communication. When installed on private networks, it provides automatic dial back-up in the event of leased-line failure. It is available as a standalone unit or as a plug-in card.

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Worth Noting

Only 10% of all network sites are currently using Open Systems Interconnection net management protocols, while over one-third are using the Simple Network Management Protocol, according to a recent survey by International Data Corp., a research firm in Framingham, Mass.

Data Packets

BT North America, Inc. last week announced it will provide electronic transaction services for the county of Los Angeles that will allow people to pay traffic and parking tickets with credit cards at kiosks located outside the county courthouse in Long Beach, Calif. Also, users at the Los Angeles Municipal Court will be able to pay their fines via a push-button telephone through an application on a voice response unit.

The kiosk and voice response unit applications take advantage of BT North America's Tymnet packet network and Async Dial-up service. The kiosk communicates via Tymnet to credit card authorization services, banks and hosts that control data on traffic and parking violations.

Integris, a systems integration company owned by **Groupe Bull SA**, last week announced it has acquired UniKix from **Unicorn Systems Co.** UniKix enables users to run IBM CICS applications on most Unix platforms and thus fits with Integris' downsizing business focus.

Integris said it plans "significant investment" in UniKix research and development as well as marketing. The company is seeking third-party partners in the application and systems software arenas to help expand UniKix distribution.

TyLink to add inverse mux features to access products

Firm to unveil three additions to line at ComNet.

By Paul Desmond
Senior Editor

WASHINGTON, D.C. — TyLink Corp. is expected to announce later this month three new models in its line of dedicated and switched service access products, including two with inverse multiplexer capabilities.

TyLink last year announced the Switched Network Server (SNS) 400, which can be used to access high-speed switched or dedicated circuits via a dedicated T-1, fractional T-1 or Integrated Services Digital Network link ("TyLink DSU/CSU can tap switched services," *NW*, Nov. 11, 1991).

At the ComNet show here later this month, TyLink will announce the SNS 4000, which expands on the SNS 400 by adding an inverse multiplexing capability. The company will also introduce the SNS 300, an inverse mux geared to disaster recovery applications, and the SNS 256, a low-end version of the SNS 400.

Inverse muxes are used to set up high-speed wide-area network links by establishing and synchronizing multiple switched 56K bit/sec calls and amalgamating the bandwidth to form a single, larger contiguous bit stream.

The SNS 4000 uses the same base platform as the SNS 400 but includes a new module that supports the inverse multiplexing capability, said Jack Kelly, vice-president of TyLink. With the module, up to 24 switched 56K bit/sec calls can be pooled and handed off to a single application.

Like the SNS 400, the SNS 4000 has four local ports, which can be configured for V.35, RS-232, RS-449 or T-1 physical interfaces. Each of the four ports can be used to establish any number of switched 56K bit/sec calls up to the maximum of 24 that are supported via the device's single T-1 wide-area trunk.

The SNS 400 has no inverse

(continued on page 18)

Modeling tool helps users plan net growth, changes

By Paul Desmond
Senior Editor

FOSTER CITY, Calif. — Comdisco Systems, Inc. this week plans to unveil network modeling software that can help users plan network expansion or changes and predict the impact of net failures.

The software, dubbed PlanNet, employs the Open Software Foundation, Inc.'s Motif graphical user interface and comes with a variety of icons that represent physical components, protocol stacks and various types of traffic simulators. It allows users to test network changes ranging from the addition of a single new user to how the network will react when a bandwidth-intensive imaging application is added.

Similarly, users can employ the software in order to test the effects of various disaster scenarios.

PlanNet runs on Sun Microsystems, Inc. Sun-4, Digital Equipment Corp. DECstation and Hewlett-Packard Co. 9000/700 workstations.

PlanNet components

Users purchase whichever physical component, protocol stack and traffic generator modules they require. The first available physical component modules are for 10Base-T, token-ring and Fiber Distributed Data Interface local-area network environments.

Wide-area components include bridge and router modules, plus a module that can simulate either public or private lines for constructing simulated wide-area mesh networks.

The first protocol stack module to become available will be Open Systems Interconnection. Colin Mick, technical director for network products at Comdisco Systems, said the company also intends to provide modules for Transmission Control Protocol/Internet Protocol, Systems Network Architecture and probably DEC's DECnet and Novell, Inc.'s Internetwork Packet Exchange (IPX) stacks.

Users build simulated nets by interconnecting the appropriate icons on the workstation screen and selecting a protocol stack. Traffic is simulated using one of three traffic generator modules: statistical packet generators, recorded traces of actual net traffic

(continued on page 18)

DualManager support growing

Vendors with products based on NetLabs' management system

Vendor	Product	Available
Ascom Gfeller AG	DualManager	Now
AT&T/NCR Corp.	StarSentry	Now
Control Data Corp.	DualManager	Now
Gandalf Technologies, Inc.	Access Manager	Now
Independent Technologies, Inc.	iVIEW	Now
Intergraph Corp.	Network management system	To be announced
NKK Corp.	DualManager	Now
Raycom Systems, Inc.	Ringleader	Now
Raylan Corp.	DualManager	Now
Siemens Nixdorf Informationssysteme AG	TransView SNMP	Now

GRAPHIC BY SUSAN SLATER SOURCE: NETLABS, INC., LOS ALTOS, CALIF.

NetLabs brings NCR on board as reseller

Also unveils enhanced version of Discovery to give managers greater flexibility in locating net devices.

By Jim Duffy
Senior Editor

LOS ALTOS, Calif. — NetLabs, Inc. last week added NCR Corp. to its roster of companies that resell its net management software and introduced a new version of its Discovery application for locating network devices.

NCR is one of 10 vendors that act as an OEM for NetLabs' DualManager product, software for Unix platforms that manages network devices via the Simple Network Management Protocol and Common Management Information Protocol over Transmission Control Protocol/Internet Protocol (CMOT) protocols. Other vendors that are DualManager OEMs include Control Data Corp., Gandalf Technologies, Inc. and Siemens Nixdorf Informationssysteme AG.

"DualManager is a very successful platform," said James Herman, a principal with Northeast Consulting Resources, Inc. in Boston.

DualManager also includes a set of application program interfaces that enable OEMs to customize the system by adding applications specific to their customers' requirements.

DualManager is the basis of NCR's existing StarSentry, a multivendor network management system based on AT&T's StarGroup Systems Manager and Computer Manager products. StarSentry also includes applications from NCR's now defunct Net Manager platform.

In fact, AT&T became an OEM of DualManager for its StarGroup Systems Manager platform, which debuted in September 1990, prior to the acquisition of NCR. But it was not clear what would become of that arrangement following the AT&T/NCR merger last summer.

"NCR decided to go with [AT&T's] StarSentry instead of Net Manager," said Carl Cirillo, assistant vice-president for the NCR network management business unit. "So this is not a new agreement; it's a restatement of the [AT&T] agreement."

> "NCR decided to go with [AT&T's] StarSentry instead of Net Manager."
>
> ▲▲▲

StarGroup Systems Manager provides centralized management of multivendor networks via SNMP and CMOT protocols. DualManager provides the TCP/IP and SNMP capabilities to StarSentry, which also supports Novell, Inc.'s Internetwork Packet Exchange (IPX), IBM's Network Basic I/O System Extended User Interface, the Open Systems Interconnection, Systems Network Architecture and X.25 transport protocols.

AT&T's Computer Manager provides fault, performance and

(continued on page 18)

NetLabs brings NCR on board as reseller

continued from page 17

security management for Unix servers and clients.

NCR's Net Manager was designed as an OSI-based enterprisewide network management system for centralized surveillance of Ethernet and token-ring local-area nets, as well as X.25 packet nets. Net Manager helps manage DOS and OS/2 clients and servers as well as distributes software to those systems. Those capabilities will debut in the second quarter.

The new version of NetLabs' Discovery software, Version 2.0, which was also announced last week, gives network administrators more flexibility in locating network devices and limits the amount of traffic associated with those searches.

Discovery 2.0 offers two methods for locating TCP/IP network nodes: a fast SNMP-based technique that identifies active IP-addressable devices and a complete sweep that indiscriminately locates all devices on the network that have an IP address. The earlier version, Discovery 1.0, only offered the fast capability.

The fast method allows Discovery to locate active SNMP devices on the network, thereby limiting the polling traffic. It then accesses the Management Information Base (MIB) of that device, which houses the routing tables and IP addresses of other devices, to find those elements and record them for representation on a topological map. The complete method allows Discovery to poll every IP address on the network and locate all active and inactive IP addressable devices.

Both methods have their drawbacks, however. The fast capability depends on the completeness and accuracy of the MIB's address tables. Inactive or recently added nodes may not be included in the MIB's address tables and would not be discovered through the fast method.

The complete technique is slower because it polls all IP-addressable devices, both active and inactive, so the larger the net, the longer the location sequence.

Discovery 2.0 is priced at $3,000 and is available now. ☐

TyLink to add inverse mux features

continued from page 17

multiplexing capabilities, Kelly said, although it could work with a video coder/decoder to establish two switched 56K bit/sec calls, which the codec could synchronize into a single 112K bit/sec pipe.

Other new offerings

TyLink will also announce at ComNet the SNS 300, an inverse mux that supports an automatic dialing feature. The SNS 300 can detect loss of carrier on a circuit, such as a T-1 line linking two channel banks. It can then automatically establish multiple switched 56K bit/sec calls for backup, Kelly said.

The SNS 300 supports two local ports and a single T-1 wide-area link. Unlike the SNS 400 and SNS 4000, it does not support the ISDN Primary Rate Interface (PRI).

The third TyLink product to be unveiled at ComNet will be the SNS 256, a low-end version of the SNS 400 targeted at users that have an existing private branch exchange, for example, linked to a T-1 via a channel service unit (CSU). By replacing the CSU with an SNS 256, the user gains the option of employing two of the T-1 channels to support a 112K bit/sec video link, Kelly said. The SNS 256 does not support ISDN PRI.

All the new products will be available in the first quarter. Although pricing is not final, Kelly said the SNS 4000 will start at about $6,000, while the SNS 256 will be priced from about $4,000. The SNS 300 will cost $7,995.

For more information, contact TyLink at 10 Commerce Way, Norton, Mass. 02766, or call (508) 285-0033. ☐

Tool helps users plan growth, changes

continued from page 17

and application scripts that describe typical network behavior.

Such scripts, which are written by the user with the help of menu-driven programs provided, may describe the traffic generated when using an electronic mail, database or word processing application, for example. Multiple scripts can be grouped together to simulate a typical work environment over a specified period of time, Mick said.

Once a basic model is complete, simple modifications or simulation initiation require only a few keystrokes, according to Comdisco. Users can lay out a multisegment campus network and get a simulation running in less than an hour, the company said.

Each module has user-configurable parameters, such as the buffer size on a router, that can be used to modify its performance. Performance of a configuration is tracked by software probes built into each module that can, for example, measure traffic loads or delay. Results are displayed graphically or in tabular form when the simulation is complete.

PlanNet is scheduled to ship early in the second quarter. A system with a single physical media and a bridge module, plus a series of traffic generators, is priced under $10,000.

To obtain more information, contact Comdisco Systems at 919 E. Hillsdale Blvd., Foster City, Calif. 94404, or call (415) 574-5800. ☐

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LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

> "In 1992, look for significant growth in LAN-based electronic mail, messaging and fax as the means for communications between companies, rather than just intracompany use. It's really starting to happen very quickly."
>
> **Patrick Corrigan**
> Managing director of The Corrigan Group in Sausalito, Calif., and co-author of *Building Local Area Networks.*

Netnotes

Trellis Software, Inc. last week introduced antitampering software that blocks unauthorized access to idle workstations on Banyan Systems, Inc. VINES networks.

The new software, called Workstation Security, automatically locks the workstation's keyboard and screen or the entire computer if the system is idle for a specified period of time.

According to Trellis, based in Hopkinton, Mass., if the keyboard locks up and the CPU is still active, the program running on the workstation will remain on the screen.

However, if the keyboard is touched, the CPU will lock up and the display will black out. If the entire machine locks up, any application in use at the time will be saved and hidden.

Users can regain access to their workstations by typing in their usual VINES password.

The software is installed on the network server with terminate-and-stay-resident (TSR) programs at each workstation.

Available now, Workstation Security costs $795 per server for an unlimited number of workstations.

The AG Group, Inc. last week rolled out new management software that will help network administrators of multivendor, multiprotocol

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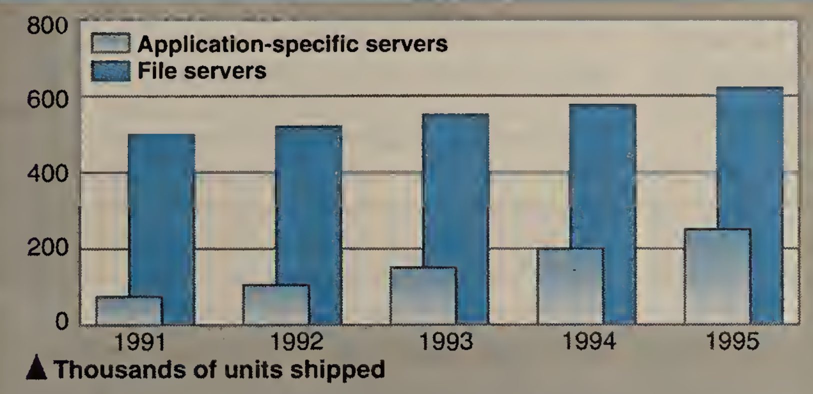
Worldwide file and application-specific server forecast



An application-specific server is a dedicated machine that gives users access to 1 or more specific applications, not including file services.

GRAPHIC BY SUSAN J. CHAMPENY   SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Microsoft, DCA upgrade LAN communications server

Supports Windows clients, 3rd party emulators.

By Timothy O'Brien
West Coast Bureau Chief

ALPHARETTA, Ga. — Digital Communications Associates, Inc. and Microsoft Corp. last week announced a new version of the their jointly developed Communications Server (Comm Server) gateway that provides LAN-to-host connectivity for Windows clients.

Comm Server is a microcomputer communications software package that runs under OS/2 and enables Windows, OS/2, Presentation Manager and DOS clients on a Microsoft LAN Manager network to interact with remote hosts.

Comm Server Version 1.1 features a new client/server architecture that splits processing loads between client workstations and the server. As a result, Comm Server can now provide desktop users with access to a broad range of third-party Systems Network Architecture connectivity options.

"With the open client interface through Windows, Comm Server has now become the standard SNA connectivity server for Windows networking," said Matthew Ragen, product manager of the Server Applications Group at Microsoft.

Comm Server 1.1 is also designed to support LAN Manager Version 2.1 and IBM's LAN Server 1.3. Because it is compatible with the LAN Manager 2.1 Remote Access Service, Comm Server 1.1 makes it possible for remote Windows and OS/2 clients to dial into the server to access peers and hosts.

To maintain acceptable performance levels for remote clients, the server also minimalizes SNA overhead that would typically have to be sent back to the remote user.

"We've made the remote access more efficient because all the SNA traffic now stops at the Comm Server — we just send the 3270 data stream, the LU packets and the compressed raw data over the line," said Robert Marsh, DCA's senior product manager.

Because earlier versions of Comm Server provided SNA access to character-based DOS clients, the shift to Windows now allows users greater flexibility from the desktop, enabling them, for example, to support five simultaneous 3270 sessions.

DCA's version

Released in conjunction with Comm Server 1.1 is DCA's new Select Windows Client Version 1.1, 3270-emulation software for Windows-based devices that is available either as a separate product for stand-alone use or as a component included with Comm Server 1.1.

By supporting five sessions and 64 LU 6.2 sessions, Select Windows Client users can simultaneously emulate 3270 display terminals, initiate file transfers, perform host printing functions and run Advanced Program-to-Program Communications (APPC) transaction programs.

In addition, Comm Server's open Windows client interface makes it possible to support third-party products.

Users have the option of using connectivity software such as Wall Data, Inc.'s Rumba, Network Software Associates, Inc.'s Dyna-Comm/Elite or Eicon Technology Corp.'s Access for Windows.

Ragen said support for third-party emulators is important because a large company can now implement certain Comm Server

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Bank's image net helps build business

Shortens loan processing cycle while enabling fewer people to handle increased loan volume.

By Caryn Gillooly
Senior Editor

HOUSTON — Texas Commerce Bank (TCB) has combined LAN-based faxing, imaging and work-flow technologies to automate loan generation, a process the company has shortened from three days to three hours.

The new network, implemented this past May, has enabled the bank to double its monthly loan volume with less staff while enhancing its reputation as a leader in retail banking.

TCB, which has $17 billion in assets, did not have a centralized operation for the consumer lending business at all its banks prior to November 1990, largely because of a Texas law requiring each bank location to be its own entity. This made it virtually impossible for the bank to set any kind of standards for lending.

That restriction, however, was lifted in 1987. TCB's Consumer Credit Operations Center was opened in November 1990, and its new lending network was in place by May 1991, according to Allen Cournyer, senior vice-president and manager of the bank's data center division here.

"We basically took advantage of an opportunity that was not available four or five years ago," he said. "Before, each bank was a full bank. Now everything is controlled by a central location."

The network

The Consumer Credit Operations Center net consists of a single local-area network connecting the mail room, loan origination, underwriting, funding, closing document preparation, collections and customer service departments.

The LAN supports four Compaq Computer Corp. SystemPro machines functioning as file/print, database, image and gateway servers; two Compaq Intelligent Array Expansion Systems that provide 20G bytes of fixed disk space for storing document images; six Compaq DeskPro personal computers set up as facsimile servers; and about 300 Intel Corp. 80386-based Compaq DeskPros for employees in each of the seven departments.

The network runs Novell, Inc.'s NetWare 3.11 network operating system as well as a PC-based imaging software package from ViewStar Corp., based in Emeryville, Calif. It also maintains an on-line link to TCB's

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Firm unveils fiber-optic SNMP-based muxing hub

By Caryn Gillooly
Senior Editor

HYANNIS, Mass. — Fibronics International, Inc. last week introduced what it claims is the first intelligent, fiber-optic SNMP-based multiplexing hub.

The product, called the Unimux V 892, combines Ethernet and token-ring connectivity with time-division mux capabilities to let users combine and centrally manage voice, real-time data and local-area network traffic over a single fiber-optic backbone.

"This is the only unit in the industry that combines LAN hub technology with real-time protocols [such as V.32 and 3270] through a fiber-optic backbone," said Ervin Johnson, product marketing manager at Fibronics, based here. "There are other companies with muxes and other companies with hubs, but this is the only combination [of the two]."

This combination, he said, not only provides central management through the Simple Network Management Protocol, but also eliminates the need for additional boxes.

According to Johnson, many customers are migrating their fiber-optic backbone traffic to Fiber Distributed Data Interface, and, for those customers, the company sells a variety of FDDI products. "But real-time protocols can't be migrated to FDDI," he said. "So there's a need for a multiplexed, non-FDDI fiber-optic backbone."

The box

According to Johnson, the Unimux V 892 consists of a single chassis with eight available slots

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Corporate Calendar offering to debut at Microsoft conference

By Timothy O'Brien
West Coast Bureau Chief

NEW YORK — The Windows Support Group, Inc. (WSG), a developer of Microsoft Corp. Windows and SQL Server database software, plans to announce today a scheduling groupware product at the International Microsoft SQL Server Week conference in San Francisco.

The Corporate Calendar, which consists of a front-end Windows-based interface as well as a server piece that is based on SQL Server, simplifies the task of scheduling meetings in large organizations.

"The Corporate Calendar was designed from Day One for use on a network and for large databases," said William Cornfield, president of WSG.

The Corporate Calendar treats an individual's time as a corporate resource, extending the benefits of individual calendaring products across the entire corporate enterprise network.

Employees can use The Corporate Calendar to maintain personal to-do lists, tickler files and work schedules. However, the real benefit is that any meeting planner with appropriate security clearances can access these personal schedules over the network to schedule a meeting.

In fact, The Corporate Calendar allows meeting organizers to schedule the meeting, reserve the conference room and request confirmation from participants.

Cornfield said he believes The Corporate Calendar's ability to handle large corporate applications is the main difference between this new groupware product and the more popular desktop or local-area network-based calendar systems.

For instance, due to the scalable architecture of the SQL Server database, companies can maintain an entire corporate directory in The Corporate Calendar address book without worrying about exceeding the capacity of the database.

In addition, the searching capabilities of the database makes it possible to sort and select a large number of names in the database so users can find the information they need quickly. The Corporate Calendar also allows each user to maintain a personal address book.

Cornfield said future development is being focused in several areas. One is to provide a version of the product for laptop users who want to tap in to the network to update calendars and appointments.

Another feature will be Expense Win-

Netnotes

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networks get a better idea of Ethernet network utilization.

The software, called Skyline/E, runs on an Apple Computer, Inc. Macintosh attached to any Ethernet network. It displays network traffic and utilization for any specified time period in the form of a vertical bar chart. Skyline/E also shows the administrator which protocols are being used and which nodes are creating the traffic. These indicator bars can be color-coded to suit the administrator's needs. For instance, red may be used to represent a dangerously high level of utilization.

The software also has built-in alarm functions. When a new or unknown node or protocol, or the violation of a maximum or minimum threshold is discovered, Skyline/E will sound an alert.

According to the company, which is based in Walnut Creek, Calif., the product is designed as a proactive management tool to help the administrator understand baseline utilization, discover peaks and valleys in network flow and determine stress points over time.

Skyline/E will be available March 2 for $695.

Firm unveils fiber multiplexing hub

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that can be populated with any mix of Fibronics interfaces, including those for voice links, 3270 devices, and token-ring and Ethernet LANs of various cable types. The product supports more than 20 real-time protocols.

In a typical installation, the chassis might be placed in the wiring closet on each floor of a building, connecting devices and networks on that floor to a fiber-optic backbone. Here, the device acts as a hub for the floor's traffic, as a repeater for passing traffic between floors and as a mux providing point-to-point connections between various devices.

With SNMP support, Fibronics' InterView network management system — or any other SNMP-based central management console — can collect SNMP statistics about nodes connected to the Unimux V892.

The Unimux V892 is available now, and pricing starts at $5,100, depending on configuration. It is combatible with existing Fibronics channel cards and is available with a field-upgradable path for current users of the company's FM832 and FM892 dedicated fiber-optic muxes.

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Figure.

V.

dows, which will allow users to calculate expense reports by summarizing daily appointment details in The Corporate Calendar.

Finally, WSG is looking to add mail-enabled front-end applications based on emerging messaging standards such as Microsoft's Mail Application Programming Interface, which would work in conjunction with The Corporate Calendar.

The Corporate Calendar is available now at a cost of $275 per user. Quantity discounts are available.

The Corporate Calendar requires SQL Server Version 1.11 and will run on leading networks, such as Novell, Inc.'s NetWare and Microsoft's LAN Manager, supported by SQL Server. ◪

Bank's image net helps build business

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minicomputers and mainframes in its Houston and New York offices.

To get a loan, customers go to one of the branch offices and fill out a simple questionnaire. The document is then faxed to Houston, where it is received by one of the six fax servers, each of which houses five fax boards. The image of the document is then automatically entered into the image processing system.

Next, the work-flow program included with the ViewStar imaging software forwards the document to the queue of a lending officer at the Consumer Credit Operations Center. This officer determines whether to grant the loan by gathering the appropriate information via electronic connections to one of the bank's host computers or a credit bureau.

Simplifying the process

To deal with various documents simultaneously, officers can use a split-screen feature to view loan documents on one screen while entering data for lender review on the other.

If the loan is granted, the electronic document is automatically sent to the funding department. From there, the image is forwarded to the originating branch, where it is automatically printed out on a laser printer.

"With this system, we're able to turn around a loan in three hours," Cournyer said. "We can even do it in one hour on a priority basis."

Because of the bank's quicker responses, it has gained a significant advantage over competing lending institutions.

According to Shelaghmichael Lents, senior vice-president of TCB's Consumer Assets Group, banks differentiate themselves by the speed and quality of their service.

Because the network cutover has enabled TCB to provide loans and other services more quickly, the bank has already seen a substantial increase in consumer loans. TCB declined to provide specific figures, however.

Cournyer said the bank has also been able to build a better loan portfolio. "Lending is a judgment decision," he said. At other banks that have a decentralized approach, the decisions about whether loans are granted are much more subjective.

With a centralized approach, a few people in one place are making all the decisions on all the loans, he said. This provides a more standardized system and, in turn, a more consistent lending business. ◪

Microsoft, DCA upgrade LAN server

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functions — such as load balancing, hot backup and dynamic routing between servers — throughout the organization, while at the same time, allow individual work groups to select whichever connectivity software suits users best.

Also part of the open client thrust is Comm Server's APPC application program interface (API). This API enables users of third-party 3270 emulators to have full and consistent LU 6.2 APPC support across Windows, DOS and OS/2-based operating environments.

Connecting LANs

Comm Server 1.1 also provides access to clients located in different local-area net domains, connecting across bridges and routers and communicating over a LAN Manager 2.1 Transmission Control Protocol/Internet Protocol transport.

Additionally, the product adds support for new net interfaces — including DCA's Irmatrac Token-Ring Adapter/Convertible — both fiber-optic and twisted-pair configurations, and Eicon Technology's intelligent high-speed X.25 adapters.

Once users are connected to Comm Server 1.1, they can access up to 32 IBM mainframes and other peer computers in X.25, distributed function terminal, Synchronous Data Link Control or token-ring environments.

Comm Server 1.1 is available now and is priced based on concurrent usage rather than on the number of network nodes. It comes in an eight-user version for $2,995, a 32-user version for $5,995 and a 64-user version for $8,995. Comm Workstation 1.1, an OS/2-based version of Comm Server for stand-alone users, costs $495.

Current registered users of Comm Server may upgrade to 1.1 at no charge. Kits are available for $3,495 to upgrade eight users to 32 or 32 users to 64.

DCA's Select Windows Client connectivity software needs to be purchased separately for Windows support. It costs $3,995 for a Comm Server-based license and $495 for stand-alone users. ◪

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Worth Noting

"It's depressing talking to network managers these days. Most are running scared because of cutbacks companies are making."

Frank Schoff
President
Management Recruiters
of Hendersonville, Inc.
Hendersonville, N.C.

Association Watch

The **Energy Telecommunications and Electrical Association (ENTELEC)** will hold its annual conference and exposition March 29-April 1 at the Dallas Convention Center.

The ENTELEC '92 Technical Program will include more than 40 hours of presentations, papers, tutorials, panels and half-day seminars on a broad range of managerial and technical topics.

Areas covered will include control systems and transmission, as well as network and emerging technologies.

The full conference and exhibition costs $345 for members and $410 for nonmembers. A discount rate for those who register before Feb. 24 is $295 for members and $360 for nonmembers.

For more information, contact ENTELEC at (214) 235-0655.

The Conference Group announced that it is accepting papers for presentation at GroupWare '92, a conference focusing on commercial groupware. The conference, scheduled for Aug. 3-5 in San Jose, Calif., is cosponsored by Lotus Development Corp. and SRI International.

Suggested topics include integrating groupware into corporate cultures, groupware case studies, and the nuts and bolts of implementing groupware.

Abstracts of papers must be submitted by March 15 along

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Personnel concerns need attention when downsizing

Political infighting, frustration can undermine efforts.

By Wayne Eckerson
Senior Editor

The biggest obstacle to downsizing is not managing technological change, but managing the technical staff that must carry out the downsizing initiative, say users and consultants.

Downsizing applications from mainframes to networks of personal computers promises to save companies millions of dollars, but many information systems (IS) and network professionals feel threatened by downsizing because they fear they will either lose their jobs or become irrelevant in an environment in which mainframe-oriented skills are no longer important.

"Downsizing means that people who have been experts in the computer field for the past 20 years may now know less than their teenage son or daughter. These people really fear that they won't be able to learn [distributing computing]," said Ron Peri, president of Computer Support of North America, Inc., a consulting company in Basking Ridge, N.J. specializing in downsizing issues.

Peri said that most IS professionals from the mainframe world can achieve strong proficiency in local-area networks and distributed computing with as few as three to six months of training.

However, some are not willing to adapt to a distributed computing environment and, therefore, resign in anger or frustration or are fired because they try to undermine the downsizing initiative, he said.

"Political infighting will destroy [a downsizing] project quicker than anything else," Peri said.

To ease fears and prevent dissension, upper management needs to clearly communicate commitment to the project. IS staffers must be given a chance to express their fears about the downsizing move along with extensive training to pick up the necessary skills and confidence.

Finally, IS staffs must be empowered with authority to make decisions about technical matters that will shape the new environment. This helps them buy in to the project and motivates them to learn new skills and adapt to new roles within the organization.

Rogers Group, Inc., a Nashville-based heavy construction company, is in the process of moving all applications off an IBM mainframe and onto more than 40 Unix processors distrib-

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GUIDELINES

BY ERIC SCHMALL

Net managers must work to foster staff loyalty

Whenever a telecom manager jettisons his loyalty to his staff, the effects are never inconsequential. Consider these examples:

Scenario 1: A network team works for months on a private branch exchange recommendation. The net manager approves it and takes it to the senior staffers, only to find out that another vendor has convinced them to buy its PBX. Rather than argue the merits of the network group's recommendation, the network manager sides with the senior staff and chastises his people for faulty analysis.

Scenario 2: A senior vice-president calls the network group's manager and complains about how one of the net control people talked rudely to a user. He demands disciplinary action. The manager apologizes profusely to the vice-president and then directs his network supervisor to begin disciplinary proceedings without first getting the net control employee's version of the incident.

Network managers rarely have a problem showing loyalty to superiors. If anything, they can appear to be slavishly devoted

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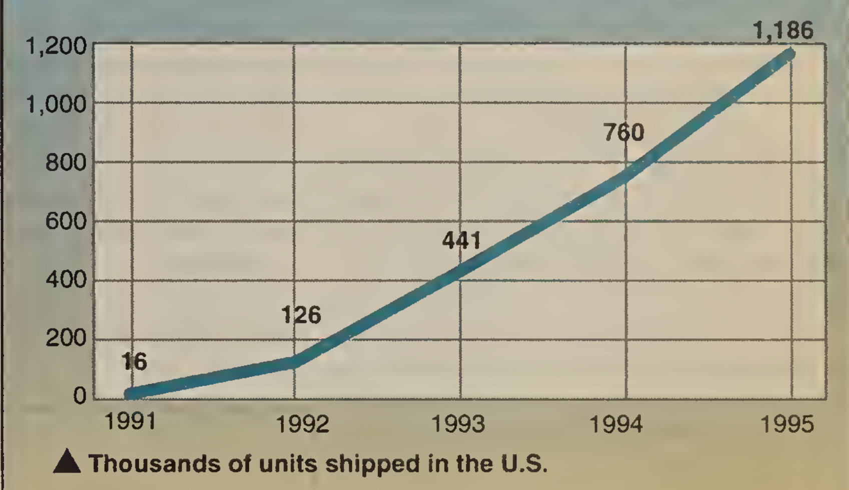
Schmall is a network systems manager for an insurance holding company.

Third-generation hub sales to skyrocket



GRAPHIC BY TERRI MITCHELL

SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

Users await hubs to build LAN internets

Net managers believe intelligent hubs can simplify internetwork design, mgmt. and offer cost savings.

By Maureen Molloy
Staff Writer

Some network managers are holding off on building enterprisewide LAN internetworks pending the arrival of next-generation intelligent hub devices that contain integrated routing capabilities.

These users say it is currently too expensive and cumbersome to build a large internetwork using stand-alone routers along with existing wiring concentrators. They believe they can simplify internetwork design and management — as well as reduce long-term costs — by installing intelligent hubs equipped with integral internetworking gear.

Randy Cosby, network manager for Texas Children's Hospital in Houston, said lower cost and more efficient management are the key reasons he chose a third-generation hub instead of stand-alone routers.

"There's so much complexity involved in building an internetwork that I welcome any product that can simplify the design and cut down on the number of boxes needed," he said.

Cosby will soon install 3Com Corp.'s LinkBuilder 3GH hub to support medical imaging and video applications across the hospital's seven-building campus net. Using a Fiber Distributed Data Interface backbone net, the device will provide bridging between the Ethernet local-area networks located in every building.

3Com's expected addition of a bridge/router module for the hub will enable the device to support even faster exchange of data between the Ethernets and the FDDI network.

Cosby said the integrated router/hub will simplify the task of configuring and segmenting the hospital network. It will also offer high-level network management capabilities to handle the large amount of traffic streaming through the net.

Jim Harrison, program director of global networking strategies at the Westport, Conn.-based META Group, said many users have chosen to delay building internets until integrated hubs arrive.

> "I welcome any product that can cut down on the number of boxes needed," he said.

▲▲▲

"The whole point of consolidating routing into a hub device boils down to cost," Harrison said. "Rather than spend $20,000 for a stand-alone router and another $10,000 for a managed hub, for instance, users are waiting until they can buy a $20,000 box that does both."

Charles Robbins, director of communications research at Aberdeen Group, Inc., a Boston-based consultancy, said many large organizations are beginning to realize the benefits of central management and are now taking control of LAN internetworks. They are trying to design enterprisewide internetworks that minimize the number of devices required.

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Struggling firm sees outsourcing as bright spot

By Joanne Cummings
Staff Writer

IRVING, Texas — Zale Corp., the nation's largest retail jewelry chain, last June entered into an outsourcing deal with an IBM subsidiary that was expected to give the company a competitive edge.

The situation has not turned out exactly as planned for Zale, however. Recently, the financially struggling company was forced to restructure its debt and close about 400 stores. In addition, it withheld a $52 million interest payment due Jan. 2 on outstanding bonds, a decision that led some bondholders to petition the courts to force Zale to file for bankruptcy.

But the outsourcing arrangement has been a silver lining in the dark cloud hovering over Zale. According to a top information systems executive at Zale, the outsourcing deal offered significant savings that forestalled the moves taken by the company recently.

Zale has a 10-year contract with IBM unit Integrated Systems Solutions Corp. (ISSC) to manage its data center and network operations. According to David Karney, Zale's vice-president of MIS, the outsourcing arrangement has worked well and has helped stave off the firm's financial problems.

"It's been advantageous in reducing our ongoing costs," he said. "It's been a positive factor."

Karney declined to reveal either the value of the outsourcing deal or the savings Zale has reaped. He said the ISSC contract is still in effect and ISSC will continue to manage its network operations for the foreseeable future.

Zale deferred making the interest payment, originally due Dec. 2, pending sales results from the Christmas season. After preliminary fourth-quarter results showed that sales were down about 10% from a year ago, the company decided not to make the payment and announced a voluntary plan to reorganize its debt with its various creditors.

"Apparently, some of the bondholders decided they didn't want to take that route and have sought protection in the courts," Karney said, adding that the bondholder petition is still pending.

"Zale has been in some difficult times for a while," he said. "When we announced the outsourcing deal, we didn't anticipate that we would be at this point now, but the retail business in general has been tough for the past two Christmas seasons."

Karney said he believes it is too early to tell how this deal will affect Zale's future. "We believe the company has value as a going concern, as opposed to other alternatives such as liquidation," he said. "We are looking to restructure the outstanding debt in some fashion to make it a tolerable burden for us."

Zale's debt totals about $1.2 billion. ◘

Personnel concerns need attention

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uted in offices across the country.

Besides offering IS staffers extensive training in distributed processing, Rogers Group held team building sessions off-site, encouraging employees to express their concerns about the downsizing decision.

"The team building sessions were extremely important to the ultimate success of the downsizing project," said Tom Gmitter, director of information services at Rogers Group.

In addition, Rogers Group made the 30-member IS staff responsible for deciding which hardware and software should be purchased and how it should be implemented. Having employees set the strategic direction for the downsizing initiative empowered the staff and made it more willing to facilitate the change to distributed computing, Gmitter said.

"Our experience showed that people are much more committed to something they have helped give birth to rather than something that is handed to them," he said.

The Federal National Mortgage Association (Fannie Mae) is moving applications off a mainframe to distributed LANs in order to reduce the time it takes to put together deals for the mortgage-backed securities it sells to Wall Street investors ("Process redesign increases return on net investments," *NW*, April 22, 1991).

IS managers at Fannie Mae have tried to alleviate staff fears by assuring employees that their mainframe-oriented skills will be critical during the five to six years it takes the company to move to a distributed processing environment. In the meantime, the company is training existing IS staff as well as recent college graduates in workstations and LAN technology, said Andrew Weiss, vice-president of business process redesign at Fannie Mae.

While most of the IS staffers have settled into their new roles, some senior IS executives left because they could not or did not want to work in a distributed computing environment.

"The IS organization has been so entrenched in traditional technologies that is difficult for a few people to make the change, and they end up leaving," Weiss said. ◘

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Net managers must foster staff loyalty

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to their bosses. But net managers who show more loyalty to superiors than staff members face a host of serious problems. For example, morale plummets among staff members, and few people are willing to devote too much effort to any given project or implement innovative solutions to problems for fear of having their ideas rejected.

Managers who are quick to align themselves with their boss' viewpoint shatter the trust between them and their staff. Staff people expect net managers to support and defend them against unreasonable criticism from others within the company, especially when the staff has followed the net manager's instructions and guidelines.

Once employees lose faith in their manager, they quickly turn cynical and lose motivation.

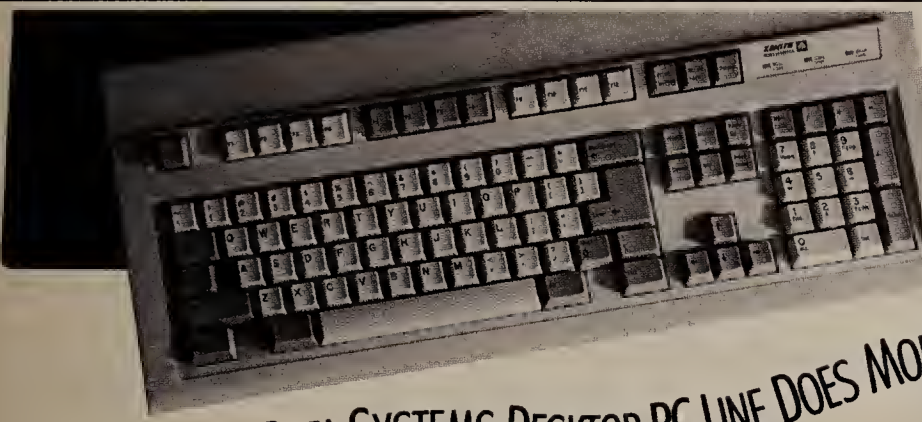
Staffers make only "safe" suggestions, abandoning creative thought and recommending action that the boss is likely to approve rather than action that best solves a problem or meets customers' needs. Where there is little initiative, there can be little controversy.

Course of action

In order to avoid such a situation, net managers need to serve as an advocate for their staff.

This is not to say that net managers should avoid reprimanding or criticizing staffers. Rather, network managers should act as a shock absorber, defending staff from unfair attacks and assessing the opinions of senior executives on their merit rather than by the rank of the person making the comments. A good net manager is willing to accept responsibility for the group's activity.

A network manager's staff has every right to receive the military equivalent of air cover. Managers should be circling above their staff to fend off unreasonable attacks from higher-ups and outsiders — people that staffers may have no real defenses against.



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Co-Processor	Optional 80387SX	Weitek 4167 socket i486DX upgrade	Weitek 4167 socket i486DX upgrade	Weitek 4167 socket	Weitek 4167 socket	Optional 80387SX
Memory (Std./Board Max.)	2MB/16MB	4MB/32MB	4MB/32MB	4MB/64MB	8MB/64MB	1MB/10MB
Expansion Slots	4 open 16-bit ISA	3 open 32-bit EISA	3 open 32-bit EISA	3 open 32-bit EISA	8 open 32-bit EISA	2 open 16-bit ISA
Hard Disk Drive	40MB or 80MB IDE	80MB or 200MB IDE	200MB IDE	200MB or 400MB IDE	340MB half-height SCSI; 6 open half-height bays	Diskless or 40MB IDE
Ports	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 2 parallel, 1 mouse	2 serial, 1 parallel
Disk Drive Controller	Combined IDE connector/ floppy controller	Combined IDE connector/ floppy controller	Combined IDE connector/ floppy controller	Combined IDE connector/SCSI/ floppy controller	EISA bus master SCSI mass host adapter	IDE connector/ floppy controller
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POWER FROM A NEW PERSPECTIVE. YOURS.

Users await hubs to build LAN internets

continued from page 23

"Previously, routers sprung up sporadically throughout end-user departments," he said. "[Information systems] has discovered the benefits of integration and centralization, and a next-generation hub fits in nicely with this strategy."

In addition to integrated routing, the high-speed switching capabilities of third-generation hubs will enable users to support a greater number of LAN devices, further reducing the number of individual LANs and stand-alone internetwork devices required to support them.

"For many users, routers are still too expensive to be cost-justified, so they're seeking ways to trim the number of devices they'll need to purchase," Robbins said.

Bruce Russell, director of strategic services at Amex Life Assurance Co. in San Raphael, Calif., is also looking to invest in third-generation hubs as a means of controlling his increasingly complex LAN environment.

"Our aim is to centralize as much of the intelligence and functionality as possible in the wiring closet," he said, "and the next-generation hub will provide us with that capability."

According to Brian Plakis, network manager at MCI Communications Corp. in Richardson, Texas, users need streamlined equipment and intelligent router and hub devices to remotely manage and control enterprise internetworks.

These requirements will become even more critical, he added, as more powerful wide-area data services with multipoint connectivity come to the fore, including frame relay and Switched Multimegabit Data Service.

"What's holding many users back from deploying internetworking devices is the lack of wide-area data communications services capable of being supported by these devices," Plakis said. "It doesn't make much sense to buy a $50,000 router if it only supports point-to-point connectivity."

Association Watch

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with a 50-word speaker biography.

Send abstracts to David Coleman, conference chairman of GroupWare '92, The Conference Group, 9875 111th Place, Scottsdale, Ariz. 85259; by fax to (415) 550-8556; via MCI Mail to 402-6509; or via the Internet at david@xidak.com.

The **American Management Association (AMA)** recently published an 80-page booklet that lists the programs, policies and procedures that create a successful service culture at Federal Express Corp.

The booklet, "Blueprints for Service Quality: The Federal Express Approach," takes an inside look at the training programs, quality measurements, reward and compensation programs, customer research, grievance procedures and executive development programs that have contributed to Federal Express' success and helped it win the prestigious Malcolm Baldrige National Quality Award.

The booklet costs $10 and can be ordered from the AMA Membership Publications Division at 135 W. 50th St., New York, N.Y. 10020.

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GLOBAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

Worth Noting

In 1988, the European market for telecommunications equipment and services totaled more than $112 billion, about 70% of the size of the U.S. market. About 30% of these expenditures were for services, while the rest were for equipment, according to Northern Business Information, a market research firm in New York.

World News

Last month, **AT&T** introduced a new volume discount plan for its international toll-free calling services called AT&T Global 800 Customer Pricing Plan.

Under the plan, users will receive a 6% monthly reduction for committing to expenditures of $10,000 per month for two years on AT&T's international 800 services. Users will receive a 7% discount for a two-year commitment to spend $30,000 per month on international toll-free calling services.

Users that adhere to their commitments for two years will receive a 30% discount on all international toll-free usage charges during the 25th month of service.

On Jan. 1, **France Telecom** reduced its prices for international direct-dial calls to 109 countries. The carrier cut the cost of direct-dial telephone calls from France to North America by 18%.

Prices for calls from France to Australia, Hong Kong, Japan, New Zealand, Singapore, South Korea and Taiwan were also cut by 18%. Prices for calls from France to most other countries were cut by 13%.

France Telecom said prices for calls from France to the 109 countries have fallen by 50% since 1985. ☐

Philippines struggles to bring telecom up to par

Country trying to improve phone density ratios.

By Carel Villanueva
Computerworld Philippines

MANILA, Philippines — Despite pockets of high-technology growth, the Philippines' telecommunications industry continues to trail those of other Asian countries.

That fact raises real problems for the concept of a "global networked society" espoused by the International Telecommunications Union in Geneva last month, according to Josefina Lichauco, undersecretary of the Philippines Department of Transportation and Communications.

"There will be no global interconnectivity if the underdeveloped and developing countries are left too far behind," she said.

In a recent speech on the future of the Philippine telecommunications industry at the Asian Institute of Management, Lichauco said the Philippines has clearly been left behind.

For instance, while telephone density has been growing at an annual rate of 25% in the country over the past 10 years, Malaysia and South Korea have enjoyed growth rates of 260% and 370%, respectively.

Lichauco said phone density — the ratio of telephones to population — remains woefully below par. Current phone density in the Philippines is estimated at 1.5 units per 100 people, the second lowest level among the countries within the Association of Southeast Asian Nations.

Promoting competition

Philippine Long Distance Telephone Co.'s (PLDT) dominance, meanwhile, may not go uncontested for long.

In an effort to encourage more private sector investment in telecommunications, the government has opened the field to competition, including the establishment of alternative international gateways.

In 1990, Cable & Wireless PLC subsidiary Eastern Telecommunications Philippines, Inc. (ETPI) became the country's second international gateway operator.

According to ETPI President Eduardo Villanueva, the installation of its System X international gateway will improve service by spurring competition and allowing the use of Integrated Services Digital Network technology.

ETPI's bid to enter the international gateway arena was followed by Philippine Global Communications, Inc. (Philcom).

"To the man on the street, the telephone is synonymous with PLDT and vice versa," said Conrado Hernandez, Philcom's executive vice-president. "But with

(continued on page 28)

WorldCom restructures to increase its profitability

By Barton Crockett
Senior Editor

NEW YORK — Although global networking is one of the hottest segments of the communications market, not every international service provider is prospering.

A case in point is World Communications, Inc. (WorldCom). Despite being one of the largest international service providers in the U.S., WorldCom lost between $6 million and $7 million last year on revenue of about $90 million, according to company executives. Continuing losses are forcing the company to restructure and search for new, more profitable niches.

Continuing changes

Billion-dollar Swiss conglomerate Motor-Columbus, Ltd. bought WorldCom for $56 million in 1988, saying the carrier would support a major push into the international services business.

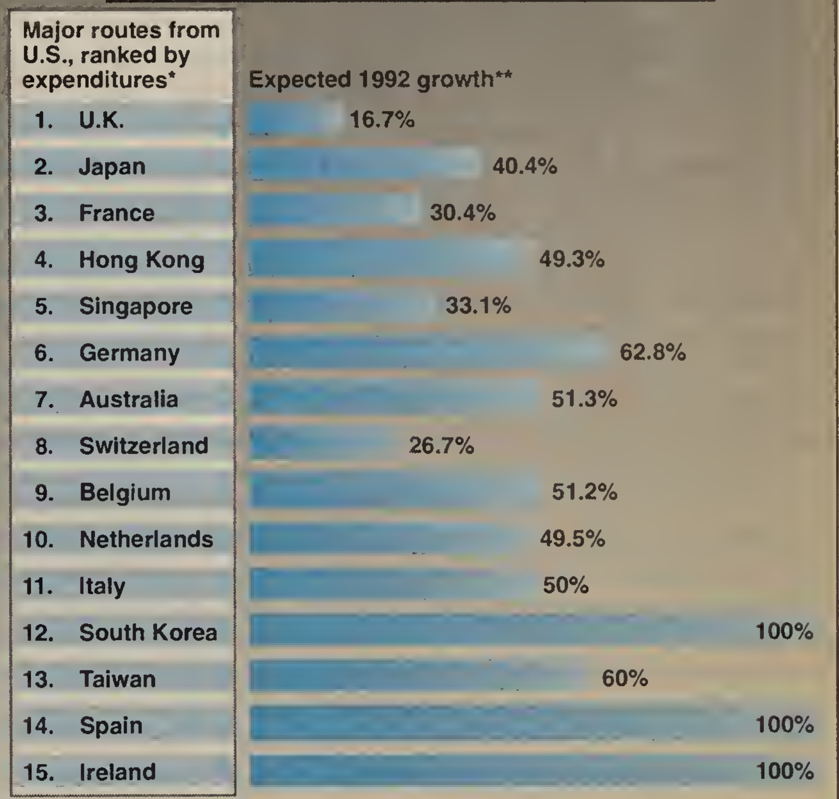
Motor-Columbus, through its TeleColumbus AG unit, pumped more than $40 million into WorldCom for new switching and transport facilities.

But WorldCom, like most international private-line service providers, has been hit by steep discounting in the international private-line sector, which represents about 70% of its business. Shortly after WorldCom's acquisition, AT&T began offering generous discounts on international private-line services through its Tariff 12 package deals.

Then TRT/FTC Communications, Inc., a $200 million international carrier that competes head-to-head with WorldCom, began an aggressive campaign to

(continued on page 28)

International private-line growth in the 15 largest markets



*Multinational firms spent a total of $404 million on digital private lines between the U.S. and these 15 countries in 1991.

**Increase in capacity, measured in 64K bit/sec increments.

GRAPHIC BY SUSAN SLATER SOURCE: MARTECH STRATEGIES, INC., INDIALANTIC, FLA.

US Sprint tries for foothold in the U.K.

U.S. carrier ready to challenge British duopoly in provision of fiber-optic, private-line services.

By Barton Crockett
Senior Editor

LONDON — US Sprint Communications Co. last week announced that it is seeking a license to become the third major carrier in the U.K.

If the license is granted, US Sprint could bring greater competition and new service options to a major global network hub for U.S. multinationals.

Users spend more on digital private-line links between the U.S. and U.K. than between the U.S. and any other country (see graphic, this page).

Currently, the only two carriers that can handle the U.K. end of these links are British Telecommunications PLC (BT), the former monopoly carrier, and Mercury Communications, Ltd., owned by Cable & Wireless PLC, based here.

Hoping to be the first carrier to take advantage of a U.K. regulatory change allowing full competition, US Sprint said it wants to build a fiber net throughout that country to support both domestic and international private-line services.

"This could definitely be a profitable venture because the U.K. is not inundated with fiber yet," said Daniel Briere, president of the network consultancy Telechoice, Inc. in Montclair, N.J.

According to Robert Woolard, vice-president of Sprint International in Reston, Va., US Sprint applied for a license on Jan. 2 to build a U.K. fiber-optic net. The carrier is seeking permission to offer international and domestic private-line and public switched telephone services over the network, he added.

Woolard said he expects the U.K. government to approve the request in the next three to five months. If approval is attained, US Sprint could begin building the U.K. fiber net this year.

Network configuration

US Sprint plans to lay approximately 800 to 1,000 miles of fiber cable in a figure-eight configuration from London in southern England, through Birmingham in the nation's midsection, to Leeds and Cheshire in the northern region of the country, according to Woolard.

If sufficient demand develops, US Sprint could expand its network to a total of between 1,500 and 3,000 miles of fiber. Woolard said Mercury Communications currently operates a 2,300- to 3,000-mile fiber-optic network in the U.K.

It would probably cost be-

(continued on page 28)

Philippines struggles to get telecom to par

continued from page 27

the approval of our own international telephone gateway facility, competition won't be far behind."

Meanwhile, the National Telecommunications Commission (NTC) has authorized another Cable & Wireless company, Digital Telecommunications Philippines, Inc., to interconnect its own domestic phone network with PLDT's. These moves are part of a government drive initiated four years ago to spur telecommunications development and economic recovery.

Mark Javier, president of the Philippine Electronics and Telephone Federation, an umbrella organization of telecommunications companies, said these efforts have paid off in terms of accelerated growth.

"This [effort] was not only focused on the formulation of policies, but also on the construction of facilities," he said. "The cooperative effort between the government and the private sector cannot be understated."

Until about two years ago, the government had been participating in the telecommunications marketplace not only as a regulator, but also as a competitor via its Telecommunications Office.

"This dual and conflicting role was a major problem to the sector and the government," Lichauco said.

To correct the situation, the government and the private sector drafted a National Telecommunications Development Plan, which provides a detailed assessment of the sector and sets a series of comprehensive development targets that cover the full range of telecommunications services from rural telephones to sophisticated computer communications. Part of this plan covers the eventual privatization of government-owned telecommunications facilities.

Currently, private international and national carriers offer a slew of services, such as overseas and local telephone, telex, packet-switched data networks, leased lines and facsimile services. Of these, telephones and leased channels offer the highest growth potential, while telex demand has been continuously dropping by an average of 20% annually.

One problem that hurts the bottom line of telecommunications companies is the proliferation of unlicensed resellers.

An analyst who requested anonymity said these resellers usually get a leased line for roughly $6,400 a month and offer service to as many as six heavy international telephone users.

But high prices and poor service quality from facilities-based carriers are hurting users. According to Ernesto Tuazon, account manager for telecommunications at Digital Equipment Filipinas, Inc., user companies are still reluctant to implement nationwide computing due to the lack of a good telecommunications system.

For example, the use of automated teller machines is being held back by poor telecommunications facilities.

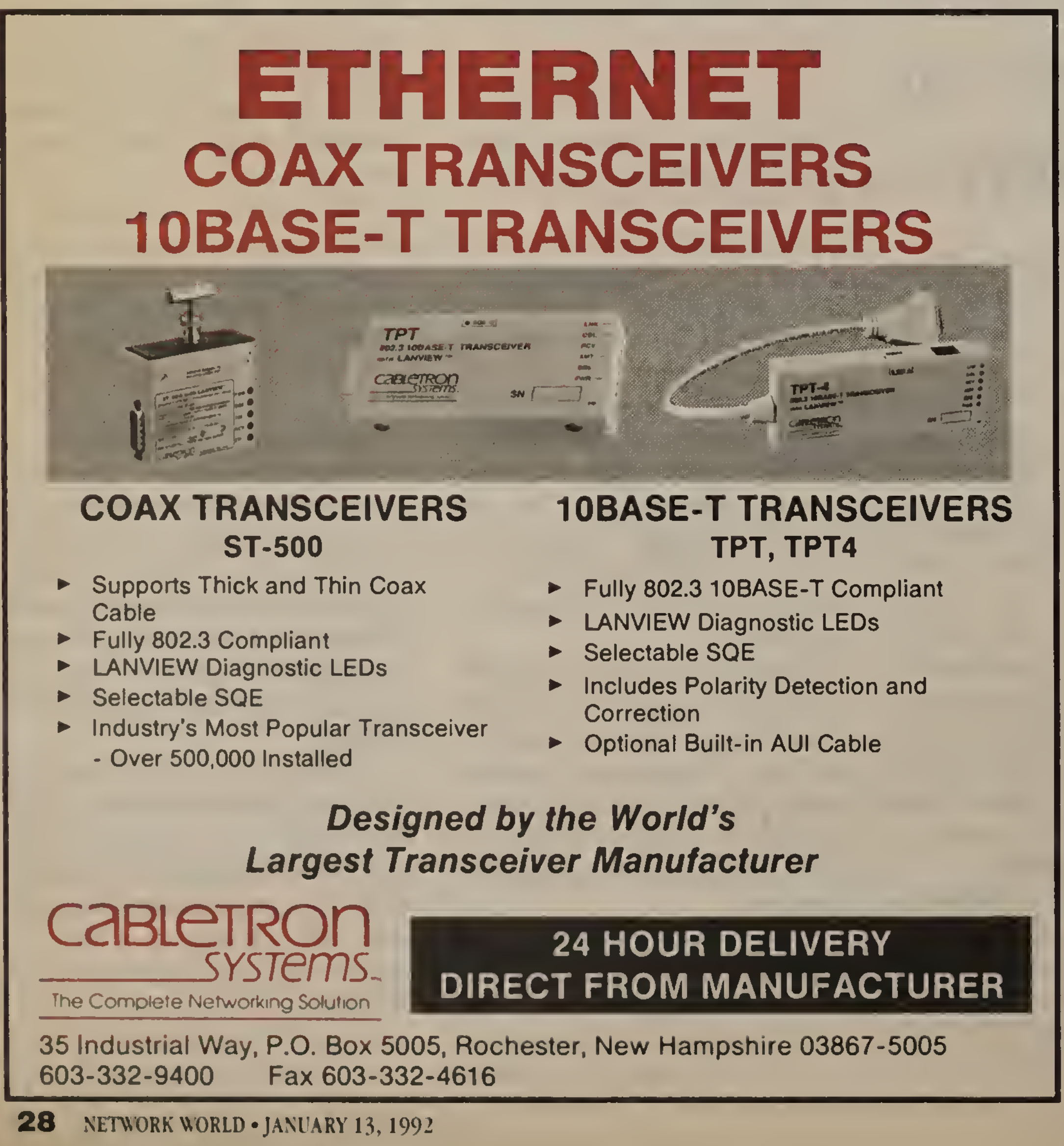
Allied Bank, for instance, was supposed to install about 65 ATMs by year-end 1991, but the lack of network facilities reduced the total to 24.

According to analysts, the problem is not the lack of leased lines, but the "last-mile" connection.

Tuazon added that PLDT's grip on local telecommunications has left corporate users with little choice but to stick it out with the carrier. "Sadly, their facilities are not only expensive, but also bad," he said.

There are prospects for improvement, though. PLDT is embarking on its X-6 expansion program that is expected to add 444,300 digital lines in the next four years. Of these, 296,400 will go to the metropolitan Manila area, while 147,900 will go to the provinces. The expansion, in turn, will improve phone density to about 2.1 units per 100 people, a ratio closer to the NTC's target density of 3.5 units per 100 persons by the year 2010.

Emerging competitors are expected to add to the number of available phones and put pressure on PLDT to improve its service. ☒



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WorldCom reshapes to increase profits

continued from page 27

increase sales, according to WorldCom sources who requested anonymity. The officials said TRT/FTC was offering steep discounts to meet financial requirements for a planned acquisition of TRT/FTC by Cable & Wireless PLC.

Cable & Wireless and TRT/FTC officials declined to comment on allegations that TRT/FTC was offering steep discounts to complete the sale. But in December, Cable & Wireless halted the acqusition, citing TRT/FTC's poor business performance and regulatory problems.

Steep discounting by AT&T and others made it impossible for WorldCom to turn a profit in its core global private-line business, according to company sources, who requested anonymity. As a result, WorldCom is trying to change its focus and is searching for new market niches.

Restructuring begins

WorldCom began restructuring in the fall, when Baden, Switzerland-based TeleColumbus announced plans to acquire 88% of Houston International Teleport (HIT), a satellite and video service provider in Houston. TeleColumbus then replaced WorldCom's Chief Executive Officer Rosario Romanelli with HIT's founder and CEO David Olson. Other officers were also replaced with HIT officials.

At about the same time, WorldCom laid off between 10% and 20% of its 330 employees. TeleColumbus also began negotiations to sell a stake in WorldCom to another carrier. Topping the list of candidates is WilTel, although a deal has yet to be announced ("WorldCom looks for mate to build net services base," *NW,* Nov. 25, 1991).

WorldCom executives say they need to team with a U.S. carrier to increase WorldCom's domestic service offerings. This would help the international carrier compete against package deals of domestic and international services from carriers such as AT&T.

WorldCom has also begun rolling out new services. For example, last July, WorldCom began reselling end-to-end international private-line services from Frankfurt, Germany, and London to the U.S. The carrier was one of the first companies to take advantage of moves by the British and German governments to lessen international private-line resale restrictions in their countries ("U.K. ends restrictions on private-line resale, *NW,* July 29, 1991).

TeleColumbus Chairman Franz-Anton Glaser said European resale could be a particularly profitable and sizable market for WorldCom as regulatory barriers on the continent continue to fall.

WorldCom is also planning to focus on offering international services to countries with weak facilities, according to WorldCom Chief Operating Officer Roan Scraper.

As an example, Scraper cited a deal that HIT and WorldCom won late last year to become the first carrier to provide private-line and switched services to researchers and scientists in Antarctica.

Scraper and Glaser also insist that WorldCom will not turn its back on its existing international private-line customers. But analysts caution that WorldCom faces a difficult multiyear transition.

"They have an established market where rates have dropped so dramatically, it's hard for anybody to prosper and other [markets] they're just entering," said Leonard Elfenbein, president of Lynx Technologies, Inc., an international network consultancy in Little Falls, N.J. "That's a major challenge." ☒

US Sprint tries for foothold in the U.K.

continued from page 27

tween £100 million and £150 million ($200 million to $300 million U.S.) to build the network, according to Woolard.

He said that while US Sprint is seeking other investors in the project, the carrier wants to control the U.K. network itself.

Using the British canals

US Sprint plans to lay cable in canals managed by British Waterways, a government agency responsible for the U.K.'s extensive canal system. Woolard declined to say whether British Waterways would be a partner in the U.K. project but added that the agency could play a role in the operation in return for granting access to its canals.

Woolard said US Sprint's principal focus would be the provisioning of dedicated bandwidth to other carriers and large user companies.

US Sprint could receive most of its business from cellular, personal communications network and cable television operators that provide public switched network services.

The British government is pushing for greater competition in these markets. Each of the new service providers is expected to buy backbone capacity from competitors to BT, such as US Sprint.

"It's really more like a carrier's carrier operation than the US Sprint operation [in the U.S.]," Woolard said.

US Sprint has not yet decided whether it would offer public data services, such as X.25 and frame relay, over its U.K. carrier's network, Woolard said.

Analyst reaction

Analysts said the U.K. government is likely to approve US Sprint's petition to become a domestic carrier in the U.K. But approval may take a while because no other foreign-owned carrier has ever entered the U.K. market.

They said US Sprint's U.K. operation would probably offer high-quality services at a good price. But they warned that US Sprint's entrance into the U.K. market could further deteriorate the carrier's relationship with Cable & Wireless.

US Sprint has been working with Cable & Wireless to develop international virtual network and calling card services through a partnership called the Global FON Alliance.

According to analysts, the two carriers have experienced problems in their relationship, including disagreements over strategic directions and concerns over the increasing competitiveness of Cable & Wireless' U.S. carrier, Cable & Wireless Communications, Inc.

If US Sprint competes against Cable & Wireless in the U.K., tensions could escalate.

"I don't think they'd cancel the partnership, but in the long term, I don't see a lot of strength in it," Briere said. ☒

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Commodore offers less expensive E-net adapters

The Commodore Networking Division of **Commodore International, Ltd.** recently unveiled two low-cost Ethernet adapters designed for workstations and servers in Novell, Inc. NetWare environments.

The **Ether-8 Plus** and the **Ether-16 Plus** are Ethernet adapters for eight- and 16-bit Industry Standard Architecture microcomputers. Each product has one standard attachment unit interface and one BNC network port for connecting to thin- and thick-wire Ethernet local-area networks. In addition, Commodore is offering the **Ether-16 Plus Combo,** which includes a 10Base-T port for use with unshielded twisted-pair wiring.

Available now, the Ether-8 Plus is priced at $180 while the Ether-16 Plus is priced at $200 and the Ether-16 Plus Combo costs $250.

Commodore International, Ltd., Commodore Networking Division, 1200 Wilson Drive, West Chester, Pa. 19380; (215) 431-9100.

Ontrack upgrades antivirus tool kit

Ontrack Computer Systems, Inc. recently unveiled a new version of its antivirus tool kit that detects more than 1,000 viruses and scans system memory for viruses 50% faster than the previous version.

Dr. Solomon's Anti-Virus Toolkit Version 5.52 is software that resides on a personal computer.

For the first time, it offers an Anti-Stealth Methodology feature that enables users to scan for and detect stealth viruses without having to boot the computer. Stealth viruses hide in system memory.

Another new addition is GuardMem, a tool that scans system memory for several known memory-resident viruses.

Available now, the new version of the tool kit, like the previous version, is priced at $149.95.

Ontrack Computer Systems, Inc., 6321 Bury Drive, Eden Prairie, Minn. 55346; (800) 752-1333.

Calendar tool uses E-mail for WAN link

By Joanne Cummings
Staff Writer

FRAMINGHAM, Mass. — Microsystems Software, Inc. recently unveiled new versions of its work group task planning software that enable users to pass scheduling data over wide-area networks.

The new versions allow CaLANdar users to employ their existing electronic mail gateways to distribute calendaring activities across a multiserver environment, the company said.

Each of the four new versions is designed to work with a separate E-mail system: Lotus Development Corp.'s cc:Mail, Microsoft Corp.'s Microsoft Mail for PC Networks, Banyan Systems, Inc.'s VINES Mail and any Message Handling Service-compatible package.

Also, CaLANdar, a DOS-based appointment and task scheduler, can now send calendar notification to non-CaLANdar users through those four E-mail types.

CaLANdar is software that resides in a network server and consists of a database of user names and activity statuses. To add a new CaLANdar server to a network, users simply run the New Server component of the software. This component uses a company's existing E-mail gateways to link remote servers running CaLANdar and automatically notify them of the new server, its users and their availability.

In addition, the new version of CaLANdar can for the first time notify users on a non-CaLANdar-equipped network of various calendaring activities via an E-mail message, provided that the users are connected to the E-mail network. The software does not allow these users to update information in CaLANdar, however.

When users update their personal calendar, CaLANdar automatically distributes that information, as well as descriptions of each user's appointments, to remote servers. Updated availability and user lists become accessible to clients attached to CaLANdar servers in the amount of time it takes an E-mail message to cross the net, the company said.

As a security measure, CaLANdar enables each user to override the feature that sends appointment availability and description to other servers. It also enables users to assign password access to their information.

WAN versions of CaLANdar are currently available at a cost of $995 for a 50-user license.

For more information, contact Microsystems Software at 600 Worcester Road, Framingham, Mass. 01701, or call (508) 626-8511.

Firm boosts transmission rate with new MCA board

SOLON, Ohio — Star Gate Technologies, Inc. recently unveiled a 16-port serial communications board for Micro Channel Architecture (MCA)-based computers that supports transmission rates up to three times faster than the company's previous MCA board.

The ACL MC16 supports speeds greater than 38.4K bit/sec simultaneously on all ports and can be programmed to support speeds up to 115.2K bit/sec. The previous version could only support speeds up to 38.4K bit/sec.

The new offering also supports twice as many ports as the previous eight-port version.

The ACL MC16 is used to connect serial devices, such as printers, other personal computers, dumb terminals and modems, to MCA-based computers. It is designed to fit in a single slot of any MCA-based computer running Unix, OS/2, DOS or Citrix Systems, Inc.'s Multiuser operating systems.

The new board features a 16-MHz on-board microprocessor and 20-MHz Reduced Instruction Set Computer communications chips. These chips not only allow the board to support faster transmission speeds, but also enable it to buffer data by using on-chip first-in, first out (FIFO) memory.

By buffering data in FIFO memory, the microprocessor can better handle the data generated by the 16 active ports, said Ray Wymer, president of Star Gate.

In addition, the new board features surge protection on all ports.

Available now, the ACL MC16 is priced at $1,695, which includes fully shielded cables and either RS-232 or RS-422 connections.

For more information, contact Star Gate at 29300 Aurora Road, Solon, Ohio 44139, or call (216) 349-1860.

Rockwell enhances ACD mgmt. system

Upgrade allows display of real-time information from multiple ACDs on a single remote console.

By Joanne Cummings
Staff Writer

DOWNERS GROVE, Ill. — Rockwell International Corp.'s Switching Systems Division recently unveiled a new version of its automatic call distributor (ACD) management software that features improved control over distributed call centers.

The latest upgrade of the Rockwell Resource Management Center (RMC) enables users to display real-time information from as many as 20 ACDs on a single console, as well as collect ACD alarms, print customized traffic reports and configure any ACD from a remote location.

Previously, users could only receive statistical updates at preset intervals, according to Jake Chacko, director of marketing at Rockwell.

Like the previous version, the new RMC is software that resides on a VAX processor. The enhanced release enables users to display real-time node and agent group statistics for all network ACDs on a single monitor.

In addition, if the screen shows that the calls at a particular node are stacking up in a queue or that the delay time in the queue is increasing, the RMC can now automatically reroute calls to other nodes capable of handling the traffic. Previously, the rerouting function required manual intervention, the company said.

With the new version, users can also review the results of the rerouting in real time and make changes to obtain the best distribution of traffic across all ACDs on a network, Chacko said.

The enhanced RMC also enables network administrators to collect ACD-generated reports throughout the network and print them at the RMC.

A new report writer feature enables the administrator to build customized reports in the form of text, graphs, pie charts or bar charts using data collected from the ACDs. Previously, RMC reports could not be customized by the user.

> A new report writer feature enables the administrator to build customized reports.
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It can also program automatic command sessions so that an administrator can automatically close down a center, for example, at a specified date and time.

Available now, the new version of the RMC is priced from $220,000 to $750,000, depending on the customer's number of ACD sites and particular needs.

For more information, contact Rockwell's Switching Systems Division at 1431 Opus Place, P.O. Box 1494, Downers Grove, Ill. 60515, or call (708) 960-8000.

Tool for Windows ties LANs, host

SEATTLE — SPRY, Inc. recently unveiled software that enables Microsoft Corp. Windows users on a variety of local-area networks to establish TCP/IP sessions with a mainframe without rebooting their PCs.

The software, called Air for Windows, enables users to click on an icon and establish a terminal-emulation session in a window on the personal computer while still connected to the LAN.

Air for Windows resides on client workstations and is compatible with a variety of Ethernet and token-ring LAN software, including Banyan Systems, Inc. VINES, Digital Equipment Corp. DECnet, Microsoft LAN Manager, Novell, Inc. NetWare, The Santa Cruz Operation, Inc. SCO Unix/Xenix and 3Com Corp. 3Com.

The software utilizes Microsoft's Network Driver Interface Specification.

Air for Windows is available now. Pricing for the product ranges from $995 for a 10-user license to $9,950 for a 250-user license.

For more information, contact SPRY at 1319 Dexter Ave. N., Seattle, Wash. 98019, or call (206) 286-1412.

USER NEEDS

BY RON EVANS

Vendors, take note: Apple is here to stay

Recently, I called a vendor looking for an asynchronous communications server for my firm's Apple Computer, Inc. AppleTalk wide-area net. I had this dream of hanging multiple modems, facsimile modems and printers off the device, just as the manuals describe. "Oh, our product doesn't work with AppleTalk," the salesperson said. "Apple does this, and Apple does that. We can't keep up with their changing technology, blah, blah, blah, blah." I lost interest after the third blah.

Unfortunately, this response is typical of many vendors that refuse to acknowledge that Apple is here to stay. Advanced Computer Communications, Cisco Systems, Inc. and other router companies support AppleTalk Phase II, enabling AppleTalk to connect remote sites to a corporate internet. But many vendors still view an AppleTalk network as a group of computers connected by a long wire to the printer. Guess what? Apple users need fax modems, network operating systems, IBM 5250 gateways, the Simple Network Management Protocol and other capabilities found in environments such as Digital Equipment Corp.'s Local Area Transport and DECnet, IBM's Systems Network Architecture and Novell, Inc.'s NetWare.

> Manufacturers seem to think that if they ignore the Macintosh, it will go away.
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Integrating Macintosh and IBM environments is much easier if the two share the same resource. Sharing resources offers two obvious benefits. The first is that users on both platforms can access the intended network service from the same device, making cross-training on the IBM and Macintosh easier. If the Macintosh user is familiar with the process of attaching to a mainframe, the interface for the IBM user running Microsoft Corp. Windows or OS/2 is probably similar.

The second benefit is the reduced administrative cost. Analysts can troubleshoot and resolve network problems more easily when the topography is simpler. One service for both environments allows the network manager to figure out quickly if the problem is the box, the network or the user's machine. A few vendors offer IBM 3270 gateways for Macintosh and IBM users in a single box. These vendors, however, are the exception rather than the rule.

Most manufacturers seem to think that if they ignore the Macintosh, it will go away. But if they continue to ignore the Macintosh, there's a better chance that they, not Apple, will disappear. In addition to its strategic alliances with IBM and Motorola, Inc., Apple is a major player in determining the standard for Fiber Distributed Data Interface over unshielded twisted pair. By ignoring the Macintosh, vendors will only be hurting themselves — and users.

Users need open systems that transparently connect dissimilar environments and centralized net management tools that can monitor the enterprisewide network from any platform. We know which vendors are moving to embrace the Macintosh. If vendors think users are going to squander money buying resources that don't support the AppleTalk protocol, they're out of touch. Vendors, wake up and smell the fruit. Apple and the AppleTalk protocol are here to stay. ◼

Evans is a Los Angeles-based technical support analyst with KPMG Peat Marwick, an international audit, tax and consulting firm.

Editor's note: A feature describing recent AppleTalk and Macintosh networking developments begins on Page 1.

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EDITORIAL

Network management requires more than tools

You hear a lot about the tools of network management these days.

Sure, network management tools are important. But it's more important to have skilled personnel and proper procedures for handling problems as they arise than to have the latest whiz-bang tools. It's also vital to learn from the problems you solve, so you get smarter and more efficient about running your network and the systems it supports, according to network management experts such as James Herman, a principal with Northeast Consulting Resources, Inc. in Boston.

In a recent briefing, Herman related the story of one user that sorely needed to streamline network management procedures. In this user's case, 14 people were involved in the processing of a single change request, with several of them entering information about the change into stand-alone databases that served isolated needs.

While that may be an extreme situation, it's clear that many users could benefit by carefully examining the way they approach network management. Redundant operations can be simplified, unnecessary steps eliminated and a centralized database supporting such functions as trouble-ticketing and change management can be deployed.

In addition, users need to be sure that personnel are trained in handling problems and people and understand how to use the many tools the average company employs.

Through operational overhaul and an increased focus on training, companies can manage growing networks better without increasing resources. Without that, even the most sophisticated net management tools will only provide marginal improvements. (An automated mess is still a mess.)

You also need a strategic plan for getting to open net management and a step-by-step guide to get you there.

There are several open network architectures that have emerged — the most promising being the type of multivendor network management platform envisioned by the Open Software Foundation, Inc. in its Distributed Management Environment. Working with your suppliers, you must map out a plan detailing the steps necessary to get to open network management.

Even while waiting for this open management platform to emerge commercially, you can start developing the applications that will work with it, such as billing and expert systems.

In short, there's a lot you can do to improve net management today while waiting for the next generation of tools to arrive. ◼

MACROSCOPE

BY JAMES KOBIELUS

How net managers can get more from videoconferencing

Many videoconferences are a terrible waste of money and provide no more benefit than audioconferencing because users don't know how to exploit the potential of the visual component.

Frequently, videoconference participants exchange a lot of words but precious little visual information. Cameras are fixed on long shots of static individuals seated around nondescript tables in nondescript rooms.

Videoconferencing can be a powerful group productivity tool if used effectively. Companies with videoconferencing networks should coach their users in the basics of audiovisual presentation or advise them to use less expensive audioconferencing systems when visuals are not integral to the message being conveyed.

Most importantly, users must be shown the range of expressive options available to them in a videoconference, which might more accurately be termed a "multimedia conference."

The typical videoconference may involve bridged off-site audio, fixed and mobile in-room microphones, multiple steerable wall cameras, stands for still and action graphics (in which the camera remains on the speaker's hand as it draws), 35mm slide projectors, videocassette recorders, facsimile machines, electronic white boards and personal computers.

Effective videoconferences are ones in which users have chosen the appropriate range of media and have coordinated their use wisely.

In order to familiarize users with proper videoconferencing techniques, network managers should designate the following support personnel:

- Group trainers. These individuals provide hands-on training to help users become comfortable with the technology. This involves having users sit at the videoconference table and manipulate each of the I/O devices, such as wall cameras, slide projectors and microphones.

In addition, group trainers should impart some simple rules of thumb for successful videoconferences — for example, speakers should enunciate and take turns talking, and the camera should be focused on the speaker since a long shot of a large conference room makes it almost impossible to see whose lips are moving.

> Net managers need to be agents of cultural change to make videoconferencing root.
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Group trainers should gradually introduce users to the multimedia options available to them. Once users are comfortable with such simple visuals as still graphics, they can graduate to action graphics, 35mm slides, videocassettes, computer graphics or any combination of these tools.

- Media advisers. These personnel assist in selecting, preparing and orchestrating audiovisual media to be used in the conference. Media advisers, who might be room schedulers or experienced users, could use videocassette recordings to illustrate the difference between well-managed and poorly managed videoconferences.

In addition, media advisers should stress the importance of simple, uncluttered graphics with large typefaces and advise participants to display each graphic or slide for at least 30 to 60 seconds, which enables users to absorb the information being conveyed.

Just as important, media advisers should instruct users about the types of information that are best distributed before or after the conference, rather than during it. For example, meeting agendas and detailed text documents should generally be sent via fax or electronic mail to participants before the conference.

Conference room fax machines or PC-based E-mail should be used sparingly for room-to-room communications because they tend to distract conference-goers from ongoing discussions.

- Site conference directors. Many users prefer to let somebody else manage the technical side of a videoconference. Site directors perform duties such as steering the cameras, controlling graphics presentations, working the in-room fax, providing access for audio-only sites and other chores.

Network managers should designate both primary and alternate videoconference directors at each video site. Site directors will perform the "handholding" function needed to build confidence among new users and will reinforce lessons taught by trainers and media advisers.

To make videoconferencing take root in their companies, network managers need to be agents of cultural change.

We can justify videoconferencing networks only if we demonstrate clear advantages over the less expensive, more accessible alternative of audioconferencing. We must help users think in more explicit visual terms and bring video into their communications styles.

We shouldn't expect users to exhibit the directorial finesse of Martin Scorsese, but we should point out the many stylistic alternatives to the talking head and torso. ◘

Kobielus, a contributing editor to Network World, *is a telecommunications analyst with Fairfax, Va.-based Network Management, Inc., one of the largest local- and wide-area network systems integrators in the U.S.*

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TELETOONS

BY FRANK AND TROISE

Frank
Good heavens, Chumley... We've finally found one.. a Local Area Nestwork!!

Upcoming Buyer's Guides

It's never easy to select the right equipment or service. But the task can be made less difficult if you have at your disposal the information you need to do comparison shopping.

Potential buyers need answers to questions such as: What key factors differentiate one vendor's equipment or service from another's? How are new technology trends affecting a particular class of equipment or service? Are the extra features that are often available on higher priced equipment or services actually worth the added cost?

Those are just a few of the questions that *Network World* writers answer in every Buyer's Guide we publish. Following are a few upcoming Buyer's Guides, which will aid you in planning your network purchases.

April 6: Buyer's Guide to prepackaged local-area network servers. Several vendors are selling preconfigured server packages, which include a personal computer, disk storage subsystem, network interface card and network operating system software. These products take the guesswork out of configuring a server on your own.

April 13: Buyer's Guide to subrate data multiplexers. With fractional T-1 and low-speed switched digital data services becoming more prevalent, there is renewed interest in products that provide access to circuits operating at speeds below T-1. These include some that use inverse multiplexing to spread a high-speed data stream across multiple low-speed switched data circuits.

April 27: Buyer's Guide to voice processors. We'll focus on the hardware used to support strategic call processing applications such as interactive voice response.

If you have suggestions on what should be covered in these guides or your company makes equipment that should be listed in any of the above compilations, call Jim Brown, managing editor of features at (508) 875-6400 or leave a message on our bulletin board at (508) 620-1160. ◘

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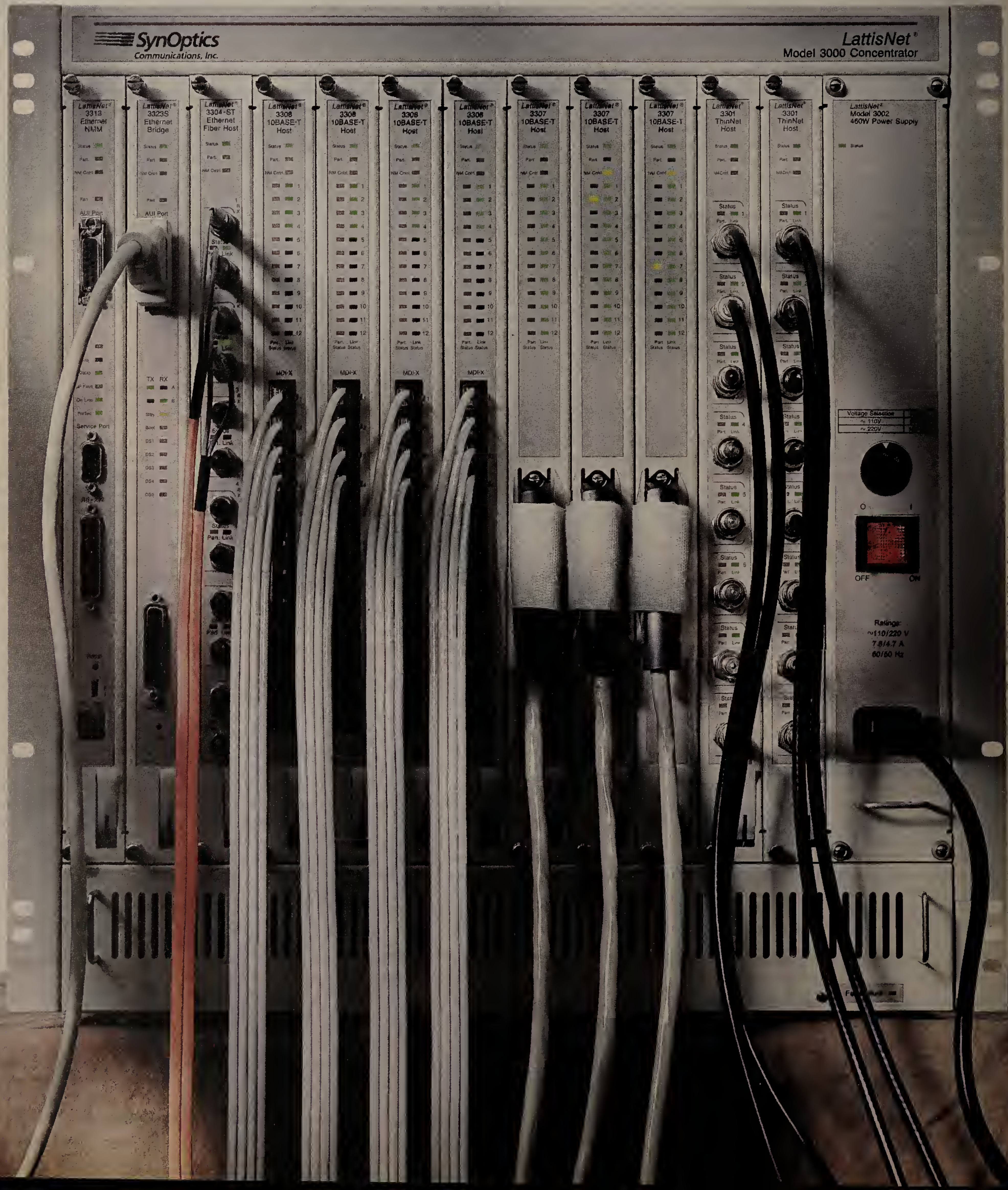
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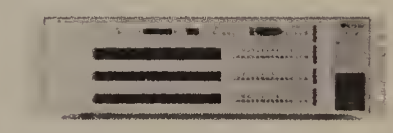

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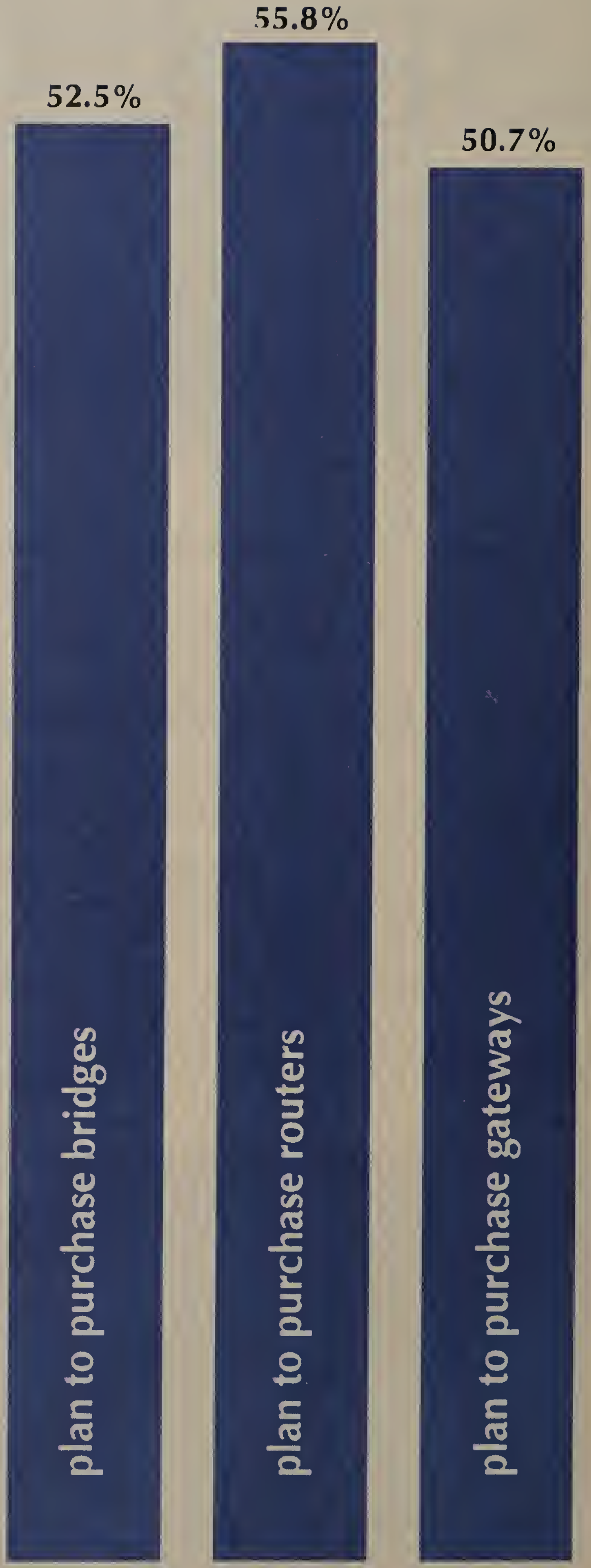


Percentage of network managers surveyed who plan to purchase internetworking products in the next 12 to 18 months and read *Network World*.

Source: The Adams Company Internet Study, 1991

NETWORK WORLD

Linking up the mighty Mac

Why IBM and many others are starting to speak AppleTalk.

ILLUSTRATION ©1992 GREG BUSKE

CONTINUED FROM PAGE 1

Macintosh specialists such as Farallon Computing and Shiva Corp. also announced Apple-related products at the show.

Throughout 1991, other important alliances and products were announced. For instance, Information Builders, Inc. announced an agreement with Apple to enable the Macintosh to work as a client to IBM mainframes running its Enterprise Data Access/SQL software, a key building block in IBM's Information Warehouse database strategy.

A number of factors contributed to the Macintosh's sudden popularity.

IBM's motive for getting closer to Apple, which led to the complex five-part deal, was largely its growing antipathy toward its long-term software partner, Microsoft (see "What the Apple-IBM deal means," page 37).

There were several reasons why vendors announced so many AppleTalk products. Chief among them was that they found it easy to work with the Macintosh networking protocol, which Apple has now licensed to some 60 companies, 30 in the last two years alone. Furthermore, the Macintosh has plenty of entrenched support in various corporate departments, particularly marketing.

Apple also introduced its own networking products during the year, including a 4M/16M bit/sec token-ring card, upgrades to its AppleShare file server and SNA•ps software that allows users to either perform IBM 3270 terminal emulation or establish peer-to-peer links to IBM hosts through LU 6.2.

In addition, Apple announced AppleTalk Remote Access, which allows users to establish dial-up links to other Macintoshes or AppleTalk networks.

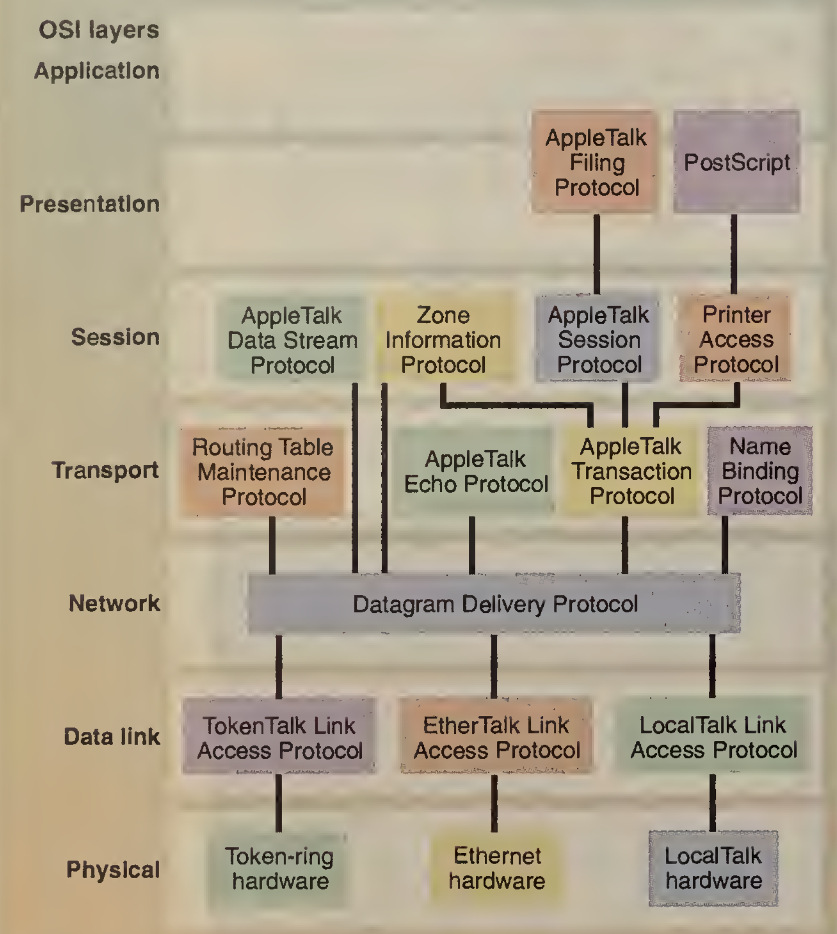
(continued on page 36)

Hindus is chief executive officer of Ribbledale Communications, Inc., a marketing and communications services company based in Hudson, Mass.

(continued from page 35)

The recent spurt in Macintosh network products is merely the continuation of Apple's long-term focus on networking. The very first Macintosh, shipped in 1984, came equipped with both AppleTalk and a built-in interface to Apple's proprietary LAN, LocalTalk.

How AppleTalk maps to OSI
Figure 1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EtherTalk Link Access Protocol
LocalTalk Link Access Protocol
Token-ring hardware
Ethernet hardware
LocalTalk hardware

GRAPHIC BY SUSAN SLATER

SOURCE: APPLE COMPUTER, INC., CUPERTINO, CALIF.

Once the Macintosh became popular, a host of third-party vendors came out with personal computer-to-Macintosh products, including Sitka Corp., a subsidiary of Sun Microsystems, Inc., which introduced the TOPS LAN, and Insignia Solutions, Inc. of Sunnyvale, Calif., which makes Soft PC, an offering that runs MS-DOS as a window on the Macintosh desktop.

Apple dropped out of the PC-to-Macintosh market in 1990 and turned over AppleShare PC and the LocalTalk PC Card to Farallon, which continues to sell them as PhoneNET Talk software and PhoneNET Card PC.

Meanwhile, firms such as Avatar Corp., Digital Communications Associates, Inc. and Tri-Data Systems, Inc. (which has since been purchased by Avatar) began selling Macintosh-to-mainframe links, all of which are 3270 protocol emulators.

There are now more than 175,000 Macintoshes connected to mainframes, according to Cindy Santisario, a senior analyst with International Data Corp., a Framingham, Mass.-based market research firm. She projects that number will exceed 825,000 by the end of 1995.

Aside from host access, Macintosh users often eschew the use of multivendor networks until their nets respond as though they are gigantic Macintoshes. Bringing users with that mind-set onto a multivendor network has been difficult.

But in the last few years, products that enable users to preserve the Macintosh's windowing and point-and-click metaphors when accessing a multivendor net have emerged. This contrasts with the relative dearth of similar products for Microsoft Windows 3.0.

There are now more than 175,000 Macintoshes connected to mainframes.

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"I often have my Macintosh connected to a Novell [Inc.] file server, an AppleShare file server and a [Network File System] file server while simultaneously accessing a VAX using VT-100 emulation in one window and a mainframe with 3270 emulation running in another window," says Dr. Steven Erde, director of academic computing at Cornell University Medical College in New York. "It's almost imposible to run simultaneous protocol stacks on a PC, but I do it all the time on my Macintosh."

Actually, the ease of setting up Macintosh LANs has created one problem: isolated islands of Macintosh LANs across the organization. In addition to the challenge of integrating Macintoshes into the enterprisewide network, net managers must find ways to use that network to interconnect AppleTalk nets.

Meeting these challenges requires an understanding of the AppleTalk protocol.

AppleTalk basics

AppleTalk maps to the seven-layer architecture all of the Open Systems Interconnection model (see Figure 1, this page). At the data-link layer, AppleTalk supports LocalTalk, Apple's proprietary 230K bit/sec LAN, which runs over a single twisted-pair wire.

Apple's products use shielded twisted pair, while Farallon's PhoneNET uses unshielded twisted pair. AppleTalk also supports connections to Ethernet and token-ring LANs.

Increasingly, Macintosh users are finding LocalTalk too slow, especially for the transfer of graphics files. As a result, they are often turning to Ethernet, for which there are now more than 40 Macintosh boards. With the Apple-IBM relationship flowering, token ring would seem to be a likely potential growth area, but so far, only about four vendors have made token-ring boards for the Macintosh.

Since LocalTalk comes free with every Macintosh and Adobe Systems, Inc. PostScript printer, many companies use it for low-bandwidth applications and mix in Ethernets where necessary.

For example, the New York advertising agency FCB/Leber Katz Partners has arranged its LocalTalk nets into star configurations using Farallon StarController hubs, but "the creative areas need greater bandwidth, so they use SynOptics [Communications, Inc.] LattisNet for twisted-pair Ethernet [10Base-T]," says Carol Agins, the firm's chief information officer.

Increasingly, Macintosh users are finding LocalTalk too slow.

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The three basic building blocks of the AppleTalk network are devices, networks and zones. Devices — generally computers, printers or servers — can have names as long as 32 characters. These names are assigned by the system manager. Device numbers are self-assigned under AppleTalk and are reassigned every time a device comes back onto the AppleTalk network.

In Apple terminology, a network refers to a physical connection between nodes without the use of a router. When two or more networks are connected through routers, AppleTalk considers this an internetwork.

The three building blocks of the AppleTalk net are devices, networks and zones.

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AppleTalk automatically assigns numbers to networks when routers form an internetwork. Its addressing scheme can support as many as 16 million devices per network for Ethernets and token rings. While 264 devices can be addressed on LocalTalk, Apple recommends that the number be limited to 32.

As networks grow, the constant broadcasting that AppleTalk uses imposes heavy overhead.

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Zones are logical groupings of devices that the network manager creates so that users can easily access network services through the Chooser, the Macintosh's built-in menu of printers and other nodes. For example, all the devices in a given department might be grouped into a single zone, or each floor in a building might be designated as a single zone.

Zone tables are maintained by AppleTalk routers. Version 2.20 of Apple's AppleTalk Internet Router software permits Macintosh IIs to act as routers. However, many users consider the Macintosh too expensive to be used as anything other than a workstation.

As a result, many AppleTalk routers run on other platforms. Examples include Novell's NetWare for Macintosh 3.01 running on high-speed PCs. Other products that can serve as either AppleTalk file servers, routers or both include Digital Equipment Corp.'s Pathworks for the Macintosh, which runs on a VAX, and Cayman Systems, Inc.'s GatorBox, which is based on a Motorola, Inc. 68000 processor.

The announced AppleTalk versions of Microsoft LAN Manager and Banyan VINES run under OS/2 and Unix, respectively. The Shiva FastPath, a combination hardware/software product, is a low-cost AppleTalk router that provides an AppleTalk-to-Ethernet gateway.

MACLAN Connect software from Mirimar Systems, Inc., which runs on a PC, works as both a Macintosh file server and a gateway to PC LANs. Additionally, Cisco Systems, Inc. provides AppleTalk routing and a link to the 100M bit/sec Fiber Distributed Data Interface on its multiprotocol routers.

Routing problems

Users say AppleTalk is fine for small networks, but as networks grow, the constant broadcasting that AppleTalk uses to update routers on network configuration and status of devices imposes heavy overhead.

Apple plans to make AppleTalk less noisy with products to be released later this year. But until then, large AppleTalk nets must be carefully configured to keep chatter to a minimum. One way to do this is to keep only one router in each zone and impose a logical naming convention so that network reorganizations do not cause naming conflicts.

"You must establish naming conventions and zone control so the user sees a hierarchical Chooser," says Michael Safly, AppleTalk protocol manager for the Network Services Group of The Boeing Co.'s Boeing Computer Support Services division in Huntsville, Ala. "All our backbones appear in the same zone, and we don't let zones extend across wide-area links."

The AppleTalk portion of the net that Safly manages has 230 zones, 285 networks and 90 routers in the U.S., Canada, Europe and Japan. It flows over a multiprotocol enterprise network, which Safly says has "tens of thousands of users" and comprises more than 10,000 Macintoshes.

Boeing Computer Support Services also has its own X.25 internetwork and more than 100

T-1 lines. The network supports five main protocols: AppleTalk, DEC's DECnet, the Transmission Control Protocol/Internet Protocol, Novell's Internetwork Packet Exchange (IPX) and Xerox Corp.'s Xerox Network Systems.

Philip Robinson, manager of network operations for GTE Corp.'s world headquarters in Stamford, Conn., offers similar advice. GTE's network comprises 1,000 devices, more than 400 of which are Macintoshes.

"Optimize your routers by balancing zone configurations and understanding the details that an AppleTalk router keeps in its routing tables," Robinson says. He also points out that as the AppleTalk net grows, there is a danger of router loops and broadcast storms if the zones are not carefully managed.

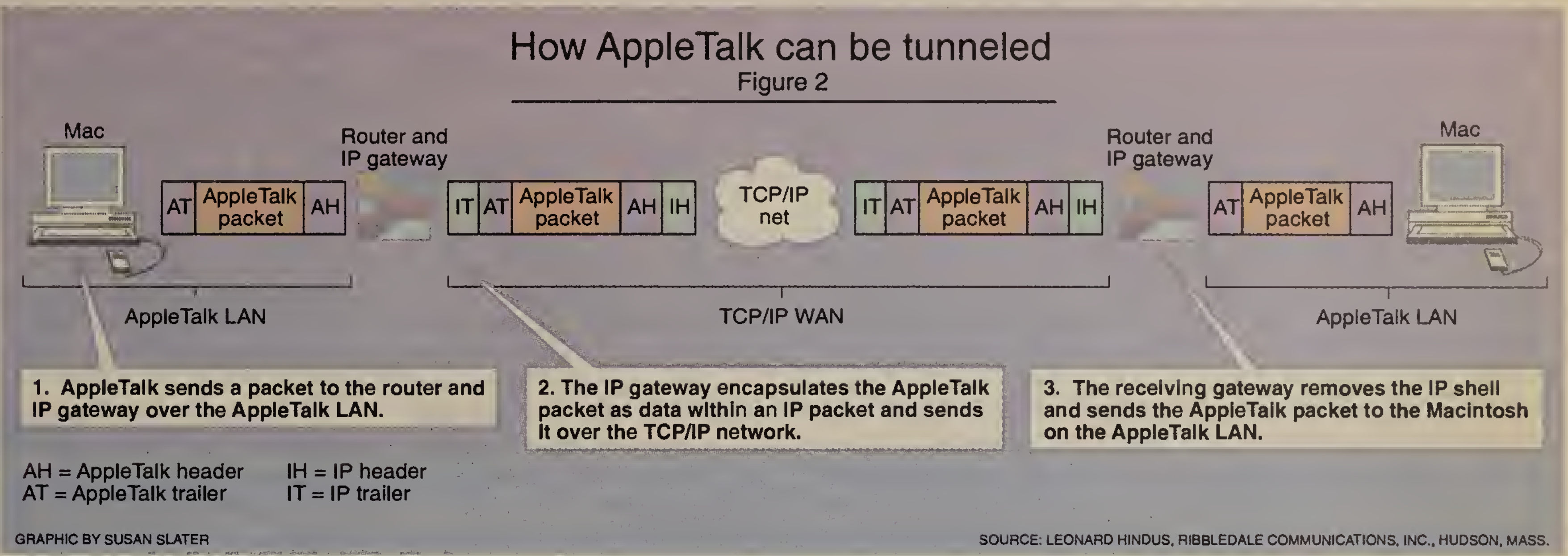
These types of traffic problems will be addressed once Apple introduces a new routing protocol later this year. The current Routing Table Maintenance Protocol (RTMP) is a major source of the chatter that limits AppleTalk's scalability. Under RTMP, every router broadcasts its entire routing table every 10 seconds to make sure all other routers have the most up-to-date information.

Apple believes it can greatly reduce this traffic by replacing RTMP with its AppleTalk Update-based Routing Protocol (AURP). With AURP, routers broadcast their tables only when a change has been made.

According to Dana Harrison, AppleTalk's product line manager, AURP was developed so AppleTalk could be efficiently transported across TCP/IP-based networks using a process called tunneling, which enables AppleTalk-to-AppleTalk communication over another protocol (see Figure 2, this page).

How AppleTalk can be tunneled

Figure 2



1. AppleTalk sends a packet to the router and IP gateway over the AppleTalk LAN.

2. The IP gateway encapsulates the AppleTalk packet as data within an IP packet and sends it over the TCP/IP network.

3. The receiving gateway removes the IP shell and sends the AppleTalk packet to the Macintosh on the AppleTalk LAN.

AH = AppleTalk header
AT = AppleTalk trailer
IH = IP header
IT = IP trailer

GRAPHIC BY SUSAN SLATER

SOURCE: LEONARD HINDUS, RIBBLEDALE COMMUNICATIONS, INC., HUDSON, MASS.

Harrison says the Internet Engineering Task Force (IETF) is considering making AURP part of a proposed specification for tunneling AppleTalk packets within IP packets.

An important question managers must answer before bringing Macintosh nets onto enterprise internetworks is whether to tunnel AppleTalk using the backbone network protocol of choice, most often TCP/IP or DECnet.

As noted, Apple advises that AppleTalk be tunneled through IP because of the need to communicate over the Internet. However, many network managers prefer to avoid tunneling AppleTalk whenever possible.

"We do not support tunneling of any protocol if we can possibly avoid it," says Philip Hewitt, manager of the Network Services Group at Boeing Computer Support Services. "When you tunnel, you will pay a 10% to 20% performance penalty for encapsulation and de-encapsulation." He also notes that encapsulation of multiple protocols can make network troubleshooting extremely difficult.

Clearing a hurdle

Products that can tunnel AppleTalk through IP include GatorBox and FastPath. However, due to their proprietary tunneling techniques, these products cannot communicate with one another. The IETF standard would eliminate this problem.

The advantage of tunneling is that it permits AppleTalk networks to communicate with one another over an existing single-protocol wide-area network.

For example, Pathworks for Macintosh, developed as part of the 1988 DEC-Apple agreement, transparently tunnels AppleTalk through DECnet. This makes it easier to integrate Macintoshes into a DECnet network.

"Mac users see one continuous AppleTalk network," says David Glasson, DEC's business development manager for PC integration. "They don't see any difference because some of the AppleTalk network is tunneled through a DECnet WAN."

Glasson does not agree that tunneling makes network management more difficult. "Network administrators continue to see VAXes connected on a wide-area network running DECnet," he says. "It doesn't matter to them that some of the data inside the DECnet packets consists of AppleTalk packets."

In addition to trying to decide whether to tunnel AppleTalk, net managers are also concerned about a serious problem lurking beneath the surface of System 7, the much applauded new Macintosh operating system.

To single users, System 7 provides important new features such as virtual memory, remote access and more efficient multitasking.

To managers of Macintosh networks, however, System 7 offers a new and significant major threat. Because System 7 comes bundled with Apple's AppleShare file-sharer software, users can configure their Macintoshes as both a client and a server without the approval or prior knowledge of the net manager.

> The advantage of tunneling is that it permits AppleTalk networks to communicate over an existing WAN.
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If users opt to make their Macintoshes clients and servers, as many net managers expect they would, traffic and security problems will increase.

"When every Macintosh client is also a server, you can quickly overburden an Ethernet with all the chatter between them," says Bill Hammond, manager of information systems at BASF Bioresearch Corp. in Cambridge, Mass. Hammond manages a network comprising 25 Macintoshes and 50 PCs.

Others agree. "Right now, we have at least 150 file servers to manage," says Boeing's Safly. "How could we hope to maintain security if there were 1,500 serv-

(continued on page 38)

What the Apple-IBM deal means

When Apple Computer, Inc. and IBM announced a partnership last October, it set off a torrent of comment and controversy, most of which concerned the long-term implications of the companies' complex relationship.

Lost in questions such as whether IBM would buy Apple were significant short-term commitments by both companies to jointly develop networking and distributed data processing capabilities for Macintosh-IBM networks.

Clearly, the project of most immediate interest to network managers is a technical alliance between Apple and IBM to begin developing products that further integrate Macintoshes into IBM nets.

Bill Brown, Apple's manager of enterprise systems, stresses that the project's priorities are flexible and can be changed as needed.

So far, the technical alliance has borne fruit in three areas. First, IBM published a detailed document describing how to integrate Macintoshes into the IBM Systems Network Architecture environment using existing IBM and Apple products. This 300-page document was completed last October.

Second, Apple developed a 4M/16M bit/sec token-ring card for the Macintosh II NuBus. The new card uses an IBM chipset, while Apple's original token-ring card used a Texas Instrument, Inc. chipset and was limited to 4M bit/sec. The new card started shipping last month.

Third, Apple enhanced SNA•ps, Macintosh-based software that simultaneously supports IBM 3270 terminal emulation and Advanced Program-to-Program Communications using LU 6.2.

The first version of SNA•ps was announced last June. Version 1.1, which was released this month, features enhanced 3270 emulation with full printer support.

Six other projects covered under the Apple-IBM networking technical alliance are scheduled for completion this year. They include:

- An IBM plan to integrate AppleTalk into OS/2 and accord it the same status as the Network Basic I/O System. IBM has licensed the entire AppleTalk protocol stack, so integrating AppleTalk into OS/2 will let Macintoshes fully participate in OS/2 networks and vice versa. It will also give Macintoshes full access to OS/2 services.
- An Apple plan to implement IBM's PC Support (PCS) for the Macintosh. PCS is a set of application program interfaces (API) that reside in the client machine and allow it to access the resources of an Application System/400 minicomputer. PCS for the Macintosh will enable it to serve as a workstation attached to the AS/400. Apple will document the APIs so developers can build cross-platform applications.
- An Apple plan to develop IBM 5250 terminal-emulation software that will enable the Macintosh to access an AS/400.
- An Apple plan to develop a version of IBM's Common Programming Interface for Communications for the Macintosh. This capability will foster cross-platform development of applications and let the Macintosh participate in peer-to-peer networks in IBM Systems Application Architecture environments.
- IBM's plan to give Apple the information needed to develop Advanced Peer-to-Peer Networking (APPN) software for the Macintosh. APPN adds directory and routing capabilities to APPC, which is already included in the SNA•ps product. APPN capabilities for the Macintosh will let that machine find a path and set up a session with another APPN node on an SNA network.
- Apple's plan to develop a module of its SQL-compliant AppleTalk Data Access Language (DAL) for the OS/400 operating system. This will permit Macintosh applications to directly access SQL database management systems on an AS/400.

Apple currently provides DAL modules for Digital Equipment Corp. Rdb and other VMS DBMSs, as well as for DBMSs running on Unix workstations, Tandem Computers, Inc.'s Nonstop SQL and IBM's DB2 and SQL/DS.

Once these projects have been completed, users will find it even easier to integrate Macintoshes into an IBM enterprise network.

— *Leonard Hindus*

When MacIS talks, Apple listens

One way that network managers can share information on integrating Macintoshes into their networks while encouraging Apple Computer, Inc. to bring out better networking products is by joining the Managing Apple Computers in Information Systems (MacIS) user group.

Formed in January 1989, MacIS is an organization whose members are chief information officers and network managers of corporations, government agencies and educational institutions with at least 100 Macintoshes.

And when MacIS talks, Apple listens.

Apple credits MacIS for influencing a number of its decisions, including extending Apple warranties from 90 days to one year.

Currently, MacIS is lobbying for Apple to improve its support infrastructure and SQL-compliant AppleTalk Data Access Language, develop better network management tools and issue better network security products.

For MacIS membership information, contact the group at 402 N. Michigan Ave., Chicago, Ill. 60611, call (312) 644-6610 or send a facsimile to (312) 321-6869.

— Leonard Hindus

(continued from page 37)

ers on the network?" Furthermore, with a multitude of private servers, "it's too easy to accidentally let other people access confidential files."

What, then, is Apple going to do about this situation? Apparently not much in the near future. Apple's Harrison admits that placing server capabilities in System 7 poses legitimate concerns for network managers. He says solutions are in the pipeline but does not know when products will be announced.

One way of limiting the proliferation of servers would be to control the System 7 server feature through a software switch in the router. The systems manager could then inform the router which users have the privilege of setting up as a server.

When Macintoshes that are denied server status announce themselves to the router on bootup, the router would respond with a software code that disables the part of the system's software that allows it to become a server.

Apple may be having trouble managing its relationship with DEC.

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Another problem for managers of Macintosh nets is that there are few products that provide network management capabilities.

Apple has only one net management product, Inter•Poll, which was designed for nets with fewer than 32 nodes and has not been upgraded since 1989. Recently, a few third-party vendors have started shipping AppleTalk management tools.

For example, The AG Group, Inc. of Walnut Creek, Calif., offers a set of net management software tools, including the LocalPeek LocalTalk analyzer and the NetWatchman for centralized AppleTalk network monitoring and alerts, both of which run on the Macintosh. NetOctopus, network management software recently released by MacVONK-USA-East of Narberth, Pa., provides remote loading of software and takes software inventories. It also runs on the Macintosh.

Farallon offers three management products that run on the Macintosh: TrafficWatch II, which tracks AppleTalk traffic across an internet and between routers; NetAtlas, which creates a network map; and PhoneNET CheckNET, which lets a manager view devices across a network and diagnose cable or network connection problems.

Apple may also be having trouble managing its relationship with DEC. Since the Apple-IBM venture was announced, reports have emerged that the undertaking is unraveling ("Users lament state of DEC, Apple deal," *NW*, Dec. 9, 1991). Fortunately, the four-year-old Apple-DEC partnership has already produced one of the more powerful products for uniting Macintoshes with enterprise nets.

Pathworks for the Macintosh is so powerful that BASF Bioresearch's Hammond says it was a major factor in his company's purchase of a VAX 4000. The firm had individual microcomputers but no networks.

In addition to tunneling AppleTalk through DECnet, Pathworks for the Macintosh provides 12 other services, including file and print services, database access, DECwindows, X Window System and an AppleTalk-DECnet gateway.

When connected to a VAX running Pathworks, the Macintosh can access DEC's Rdb/VMS databases on the VAX. And Macintosh users can purchase an AppleTalk Data Access Language (DAL) module library from Apple, which provides access to other database management systems running on the VAX, including those from Informix Software, Inc., Ingres Corp., Oracle Corp. and Sybase, Inc.

Hammond uses Pathworks to network Macintoshes and PCs and to establish WAN links with a central router in Parsippany, N.J., and the corporate headquarters in Ludwigshafen, Germany.

"I inherited an environment in which individual researchers had a variety of workstations, including 50 PCs and 25 Macintoshes," he says. "Pathworks was the only product I could find that could get everybody communicating on the same network."

Apple will announce an SNMP interface to manage AppleTalk devices by mid-1992.

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According to Hammond, an important factor in BASF Bioresearch's choice of Pathworks was the VAXShare file server, a multiplatform file server that appears as AppleShare to the Macintosh. Users on his network view VMS, OS/2 or Unix files as icons in the VAXShare volume, he says.

However, there is a snag with VAXShare. Hammond says it doesn't efficiently handle different naming conventions in various systems.

"You can create file names up to 32 characters long on both the Macintosh and the VAX," he says. "But if you do, DOS users won't see them when they log on to the server. So you have to be careful to keep your file names eight characters long."

In contrast, NetWare has solved the name space problem. "NetWare Version 3.11 is the only network operating system that provides a file system that addresses the need for multiple file name spaces," says Jamie Lewis, an analyst and vice-president with The Burton Group, a network research and consulting firm in Salt Lake City.

When a user creates a file on the NetWare server, NetWare sets the file in the native name space of the client's operating system. NetWare creates derivative file names in any secondary name spaces that have been loaded.

For example, if a Macintosh user loads a file called Stuff In My File, NetWare would create a DOS derivative name of STUFFIN.MYF. NetWare checks for duplicates in all name spaces before letting a user create a new file.

Things to come

Pathworks and NetWare for the Macintosh show how well Macintoshes can be integrated into an existing net. And important developments are continuing.

For instance, Novell licensed AppleTalk DAL, which means that Macintosh users will soon be able to access the NetWare SQL database. In addition, Apple plans to develop an implementation of DAL that will enable Macintoshes to access SQL databases on IBM Application System/400 minicomputers.

Apple is also becoming more cooperative with outside groups. "Rather than designing enhancements to the AppleTalk protocols in-house as we have in the past, we are actually letting groups such as the IETF and the MacIS user group participate in enhancing the design of AppleTalk," says Apple's Harrison (see "When MacIS talks, Apple listens," this page).

For example, he says that in response to user requests, Apple will announce a Simple Network Management Protocol interface to manage AppleTalk devices by mid-1992.

Also, Apple is allowing collaborative messaging and database access through its Open Collaborative Environment (OCE), which Harrison describes as an umbrella service within the AppleTalk architecture.

He says OCE will eventually enable Macintoshes to access databases on other systems and provide uniform directory, security, transport, messaging, electronic mail, privacy and authentication services between different vendors' products.

OCE will also support such multiple messaging systems as X.400 and Lotus Development Corp.'s Open Message Interface, which both Apple and IBM currently support.

All in all, the once-maverick Macintosh is now a well-placed piece of the networking puzzle and poised to play an important role in the larger picture of enterprise networks. ☒

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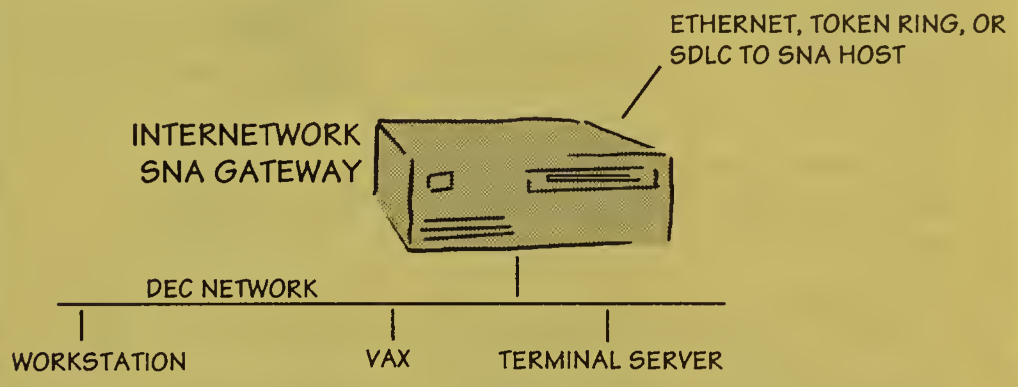

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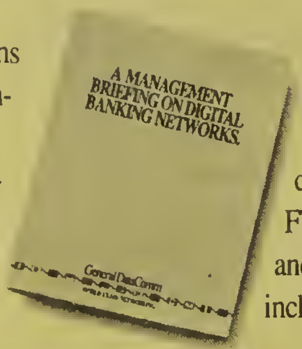

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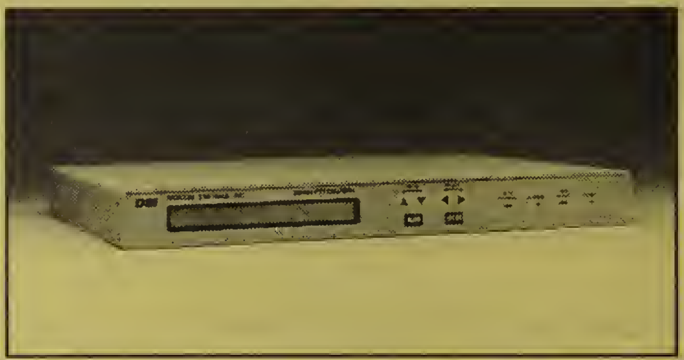

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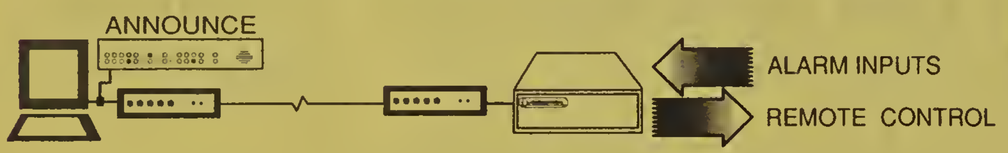

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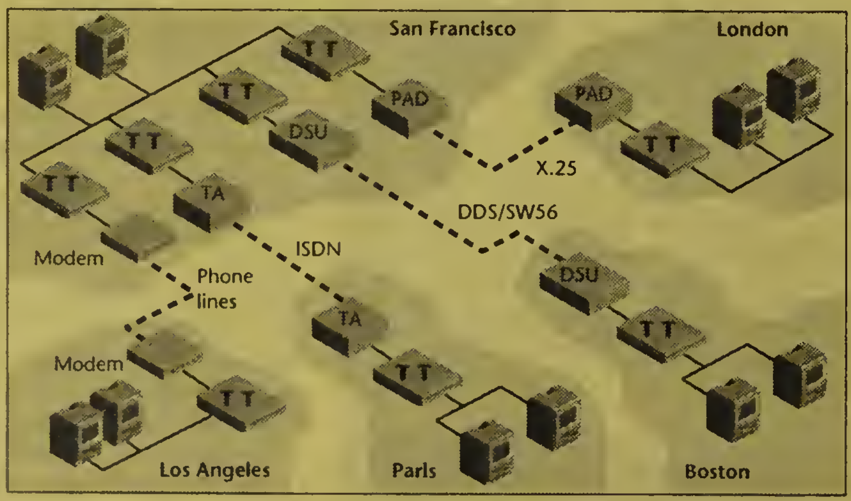

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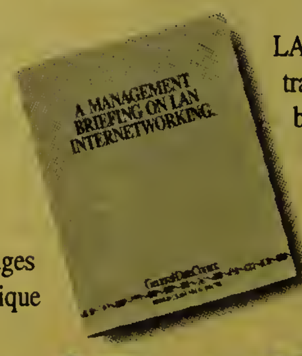

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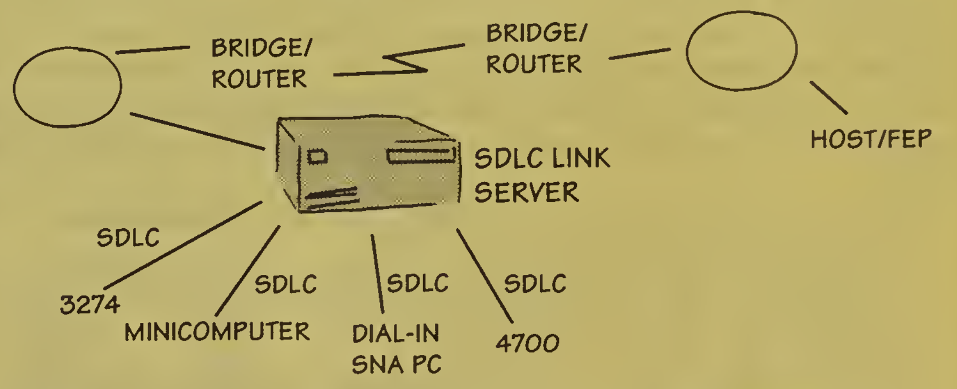

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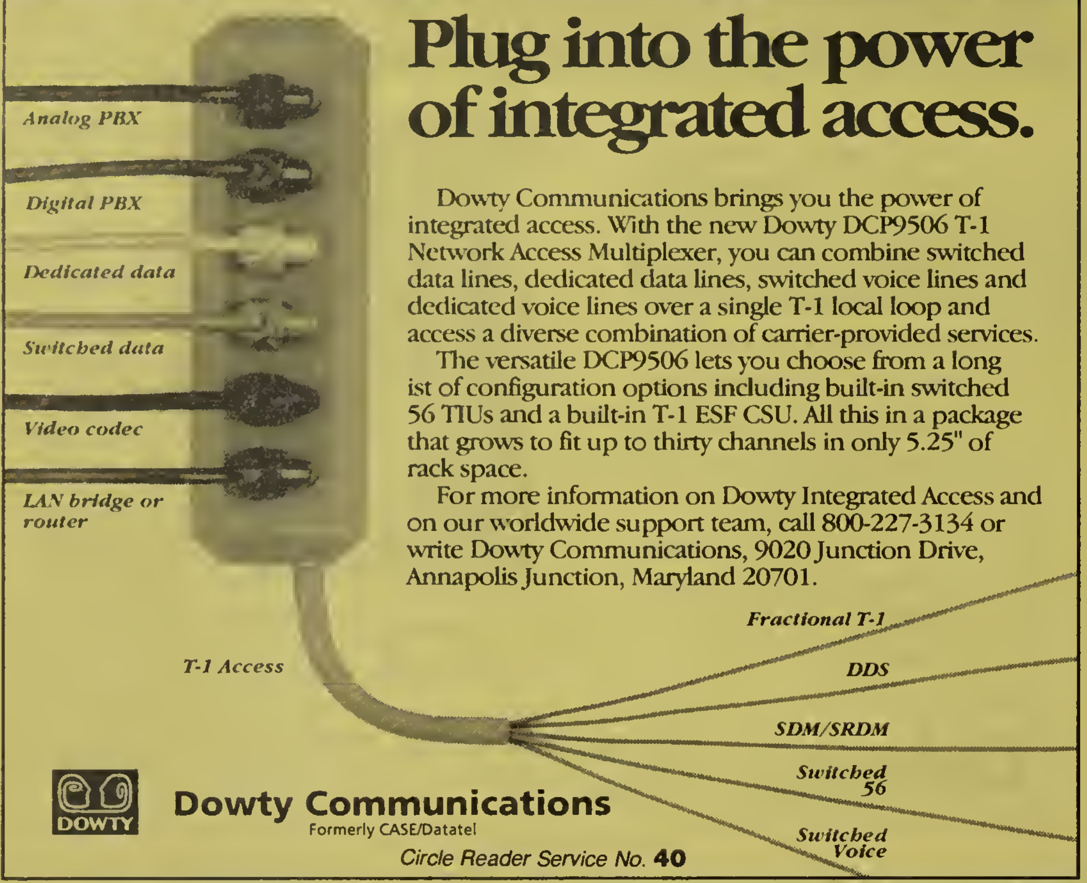

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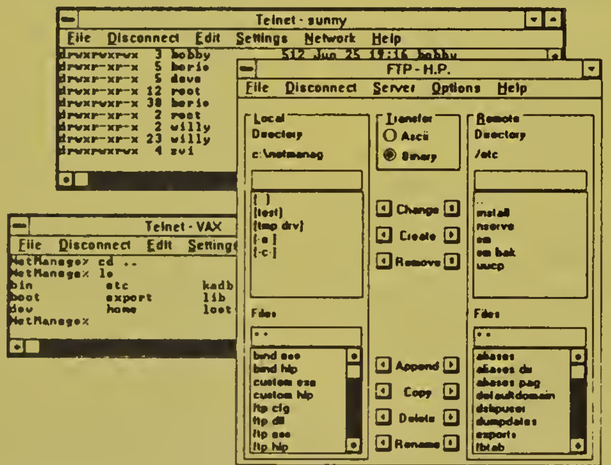

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drwxrwxr-x 38 borie
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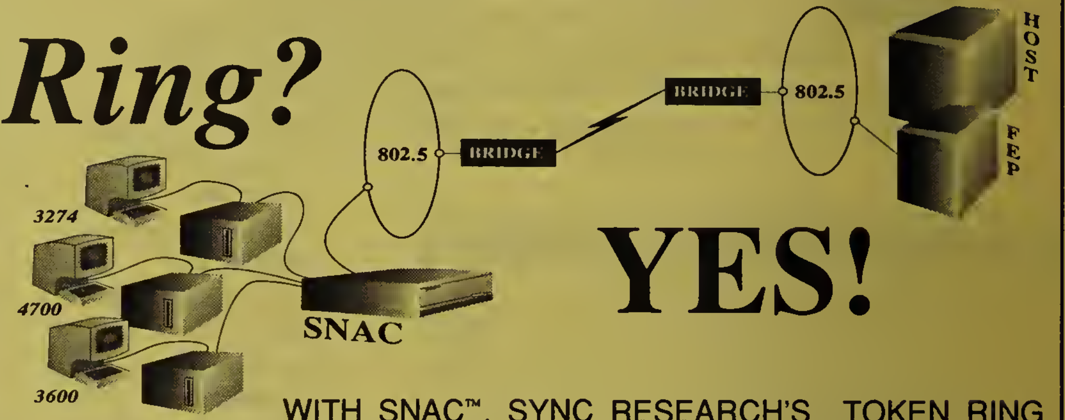

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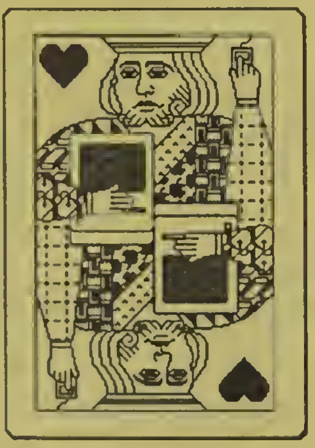

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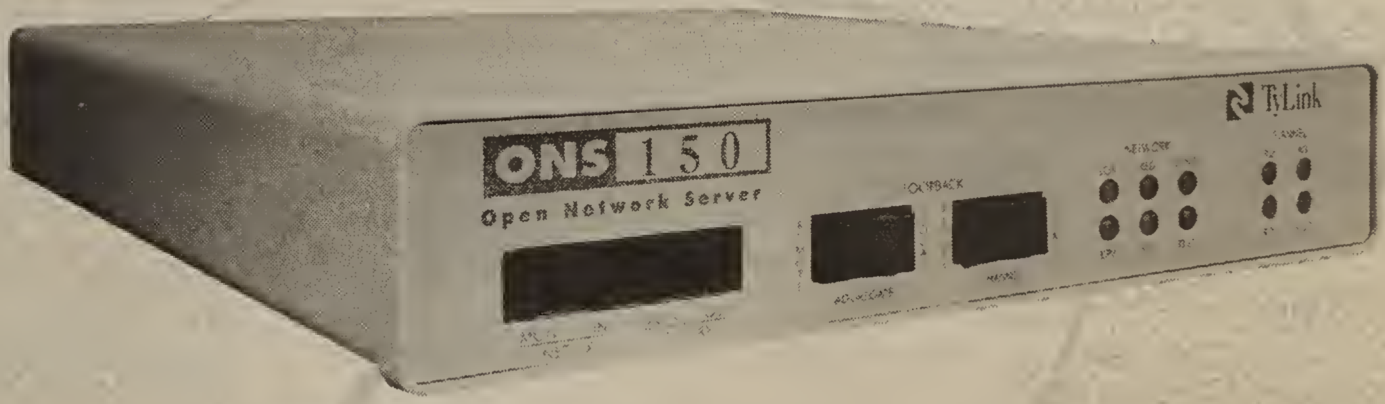

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Private-line base shapes plans

continued from page 1

US Sprint Communications Co., which has the smallest private-line market share, stands to gain the most from frame relay and has gone after the market with vigor. AT&T, the premier private-line provider, has taken a more cautious approach, attempting to stymie the loss of private-line customers to rival frame relay providers while protecting its own business.

"Sprint has everything to gain and very little to lose," said Steve Sazegari, a director with Dataquest, Inc., a San Jose, Calif., consultancy. "AT&T stood to lose the most and only announced a service after its private-line customers threatened to move to someone else's frame relay service."

Sazegari said the private-line market will decline from total revenues of $6.9 billion in 1989 to $6.8 billion in 1994. While the use of high-speed links, such as T-3, will grow, there will be a dramatic decline in the use of sub-T-1 lines, caused largely by adoption of frame relay.

That cannibalization is now beginning to occur. "Users haven't started dismantling private networks in favor of frame relay, but they have begun replacing private lines with frame relay service for smaller sites," said Nick Lippis, president of Strategic Network Consulting, Inc., a Rockland, Mass., consultancy.

The impact that frame relay will have on private lines depends on many factors, including price (see graphic, page 1).

Analysts agree that US Sprint, which had no share of the analog private-line market and only a bit more than 14% of the digital private-line market last year, will benefit most from frame relay.

AT&T and MCI Communications Corp. have more to lose. Last year, AT&T accounted for 52% and nearly 40% of the analog and digital private-line markets, respectively. MCI garnered 11.2% of the analog private-line market and 17.5% of the digital private-line market.

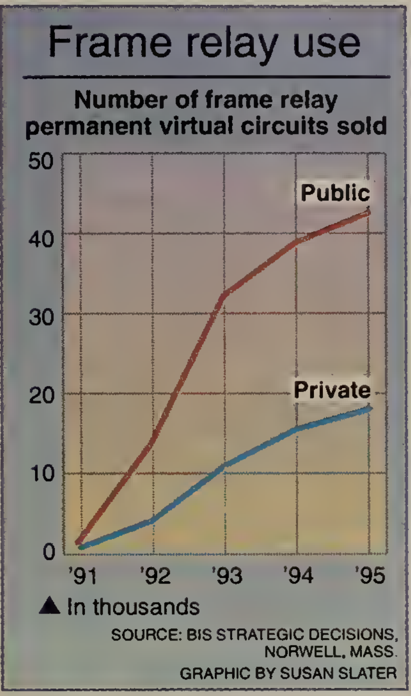
US Sprint, which began offering frame relay service late last year, may enjoy a fair amount of success in attracting AT&T private-line customers to its frame relay service. Analysts say that's because AT&T is not aggressively marketing its service, which won't be offered until next quarter.

For example, Hughes Aircraft Co. wanted a sneak peak at AT&T's frame relay service last fall before it was announced but was turned away by the carrier. Hughes instead began beta-testing WilTel's WilPak service.

David Bradski, a network manager at Hughes, said the company was hoping to beta-test the service but AT&T would not even acknowledge plans to offer frame relay. However, Hughes will consider AT&T's InterSpan service before making a final choice.

"Events like this show me that AT&T is bumbling the marketing of its frame relay service," Lippis said. "After being the last of the Top Three to announce frame relay, they can't afford not to work with interested customers."

One analyst said AT&T private-line users have pressured the carrier to offer frame relay.



SOURCE: BIS STRATEGIC DECISIONS, NORWELL, MASS.
GRAPHIC BY SUSAN SLATER

"Many users had to threaten to take their [data] business elsewhere if AT&T didn't provide frame relay," said Carl Pitasi, vice-president and director of Enterprise Network Strategies at Gartner Group, Inc., a Stamford, Conn., consultancy. "Only then did AT&T get design teams out to meet with these people."

Richard Klapman, district manager of AT&T's InterSpan frame relay service, refuted such claims. "We've been aggressively marketing the service since it was announced last November."

Meanwhile, WilTel has been marketing its WilPak frame relay service — the first available frame relay offering — since March and stands to gain some territory because it holds only a small piece of the private-line market.

US Sprint's advantages

US Sprint is aggressively marketing its frame relay service and offering a number of features that could help it win substantial market share.

One important distinction between US Sprint's service and those of other carriers is that the carrier is offering usage-based billing. Users can obtain high-bandwidth transmission but only pay for what they use.

US Sprint's service is based on its TP 4900 packet switch, while other carriers, including AT&T, WilTel and CompuServe, Inc., base their services on the StrataCom, Inc. IPX multiplexer. Although both devices can collect usage data and support usage-based billing, none of the carriers have plans to offer that option.

"We think the ability to use the service and pay strictly based on usage is a great idea," said Gary Eppink, FMC Corp.'s senior telecommunications program manager. "Sprint has demonstrated more flexibility in billing."

Another advantage is US Sprint's experience in operating a large-scale packet-switched network. AT&T has a packet-switched service that is only moderately used, and MCI stopped offering packet-switched services years ago.

"Sprint has a large amount of experience from operating Telenet," Sazegari said. "Experience counts for a lot when you offer a new version of an existing technology."

US Sprint also holds a slight lead over WilTel in service deployment, using 12 frame relay switches in its network to WilTel's 10. AT&T declined to say how many IPX muxes it will deploy. But all three say deployment is not an issue for users because they will backhaul traffic at no cost from anywhere in the U.S. to their nearest frame relay switches.

Each of the Big Three say they will deploy additional switches based on customer demand.

Although US Sprint, WilTel and CompuServe each offer integrated access — which is the ability to use one line to access frame relay and other network services — US Sprint provides the widest range of net services.

AT&T and MCI plan to offer integrated access to their frame relay services when they become available next quarter. ◻

Cayman to air hub/router

continued from page 6

from Farallon Computing, for example, is almost $2,000 more than buying Cayman's combined product, which has 24 ports.

GatorStar GX supports AppleTalk, the Transmission Control Protocol/Internet Protocol and Digital Equipment Corp.'s DECnet routing protocols at speeds up to 10M bit/sec.

The product also supports Cayman's GatorShare, which lets Macintoshes access Unix servers through AppleShare, and GatorPrint software, which enables Unix users to access AppleTalk printers using the AppleTalk printing protocol.

GatorStar GX allows users to support as many as 96 Macintoshes on an Ethernet network, or four Macintoshes per port.

The offering is available in two models: a $3,895 rack-mountable version and a $3,595 module that fits into Cabletron System, Inc.'s Multi Media Access Center smart hub. Both models will be available by the end of this month. ◻

Firm to flesh out SNA strategy

continued from page 1

Advanced Peer-to-Peer Networking (APPN).

The highlight of the Phase 3 software, due out in March, will be a feature that lets the router provide local acknowledgments as required by SNA. That will obviate the need for acknowledgment data to be sent over wide-area links. It will also keep SNA sessions active after a failure while the router finds a new data path.

In Phase 4, expected by the end of 1992, Cisco will support local termination of SNA sessions for SDLC and token-ring traffic, which promises to further reduce the amount of SNA background data sent over wide-area links.

Phase 4 will also support key features of an IBM PU 4 node, such as SNA class of service and transmission groups, said Jim Harrison, program director of global networking strategies at the META Group, a consultancy in Westport, Conn. That will let users set priorities for SNA traffic and provide added redundancy.

Phase 5 enhancements, due out in 1993, will include support for IBM's APPN, he said.

Cisco declined to comment on the announcements but confirmed that it will discuss its SNA strategy this week.

The terminator

The chief addition in Phase 3 is a feature that allows a Cisco router to terminate Logical Link Control 2 (LLC2) timers, sources said. Data sent in LLC2 packets has to be acknowledged within about two seconds. Terminating LLC2 timers allows the router to acknowledge packet receipt on behalf of the remote device to which the packet is destined.

Because the amount of time it takes to reroute data is no longer an issue, an SNA session can remain active even if the data path supporting the session fails.

There is also far less acknowledgment data flowing over the wide area. That's an important consideration, said Robin Layland, manager of the data processing department at The Travelers Corp. in Hartford, Conn.

"I'm very positive about that approach," said Layland, adding it should drastically reduce the wide-area traffic currently generated by LLC2 sessions.

"Basically, there's one acknowledgment for every message. There are even session keep-alive messages when there's nothing going on," he said. "It gets very expensive hauling all these little messages across a wide-area [link]."

With the local acknowledgment feature, the vast majority of those messages will remain on the local-area network.

"I think you're going to find a lot of [bridge/router vendors] going to this approach over the next few years because they really do need to return the LANs to being local," Layland said.

Michael Howard, president of Infonetics Research, Inc., a consultancy in San Jose, Calif., also applauded the strategy, with one footnote.

"It's proprietary, but I don't think that's a problem. It's a good way to do it," Howard said. "Users that already have Cisco routers are not going to intermix Cisco and [other] routers in the same net anyway because there are too many other inconsistencies."

Sources said Phase 3 enhancements will ship as part of Cisco's Release 9.0 software and will be delivered free to users with software maintenance plans.

A step beyond

Phase 4 will go a step beyond Phase 3 by terminating the LLC2 or SDLC sessions at the router, then starting a new session on the remote end. That will further reduce the amount of traffic traversing the backbone by keeping such nonuser data as net management information from flowing across the WAN.

But that will make net management more difficult. What once was a single session will now effectively be broken into three parts: host to router, router to router and remote router to end device.

> "Phase 4 intends to enable more intelligent transport of SNA traffic," Harrison said.

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Also in Phase 4 will be the introduction of some PU 4 features for both SDLC and LLC2 traffic. Sources said Cisco opted not to go with its original strategy of providing full PU 4 emulation because it was too difficult to develop and because users said they wanted to get away from the elaborate System Generation process that PU 4s require.

Instead, Harrison said Cisco will support SNA class of service, which lets users establish three priority levels, as well as transmission groups that let users predefine alternate paths between devices. "Phase 4 intends to enable more intelligent transport of SNA traffic," he said.

According to Todd Dagres, director of data communications research and consulting at The Yankee Group, a consultancy in Boston, "The more native you go with SNA, the less routable it is. Cisco is trying to find that happy medium between native routing and giving up on routing SNA completely." ◻

SQL Server seeks parity

continued from page 2

runs under Unix, Digital Equipment Corp.'s VMS and other operating systems, Microsoft was able to make a strong and early entry into this emerging market.

However, Microsoft has been criticized because versions of SQL Server for OS/2 have been either a full or half revision behind Sybase's offering. This has posed problems for developers who want assurance that applications will be scalable from the personal computer up.

Until this week, the current version of Microsoft's SQL Server was 1.1. Sybase has been using a different sequence, and its latest version is 4.2 or 4.8 for symmetric processing.

> "In interfacing to Sybase tools and applications, there will be compatibility with the Unix and VAX versions of SQL Server."
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New features

With the release of 4.2 this week, Microsoft added some critical features and moved to the same sequence that Sybase uses.

One of the new features allows one server to execute RPCs to other servers. In this way, clients making queries do not need to know what transactions are being executed between servers.

This new feature is especially helpful in the case of applications that need to access other database environments such as IBM's host-based DB2 or even to query an electronic mail system.

It is also important because it makes it possible to push the intelligence — the logic used to govern the manipulation of data — from the client application to the database program at the server to offer more centralized control of database transactions.

The new release has increased the flexibility of triggers, which are event-driven stored procedures that can set off a series of database commands. In the past, SQL Server would not allow triggers to invoke other triggers in a sequence, a process called either cascading or nested triggers.

This capability means developers can make triggers simpler since it will not be necessary to duplicate as many functions in triggers or be subject to as many programming limitations in complex database environments.

To increase the reliability of the database, disk mirroring has been added. The database will write to two disks simultaneously so that if one disk fails, data can be retrieved from the other.

Finally, Microsoft has given users the capability to make updates in SQL Server by using a scrollable database cursor, which allows the results of a query to be defined a row at a time. This cursor capability also includes forward and backward scrolling.

First departure

According to Finkelstein, the new cursor capability was one of the missing pieces in SQL Server that, until now, forced programmers to rely on workarounds in building applications.

However, the cursor capability is an addition by Microsoft, not Sybase, and is Microsoft's first departure from Sybase's 4.2 product. This was possible because Microsoft addressed the cursor capability at the client with its DB Library, which allows application development in C, BASIC and other programming languages.

According to Sybase, because Microsoft implemented the cursor at the client, it will be compatible with Sybase's SQL Server.

"In interfacing to Sybase tools and applications, there will be scalability and compatibility with the Unix and VAX versions of SQL Server," said Sarah Forsman, group product manager for desktop products at Sybase. "The key message here is that we have finally achieved the same release level and it will stay that way."

No availability or pricing for the new release was available at press time. ◘

FCC drops the ball on changes

continued from page 4

tions to the proposed changes and the FCC had been examining the issues, asking AT&T to push back the effective dates for the revisions to Dec. 20 and Dec. 21.

According to sources, the FCC intended to keep asking for extensions through December, but records indicate and AT&T confirmed that the agency failed to ask the carrier to defer the dates into January.

Since the deferment was not requested and the FCC did not issue an order rejecting the tariff changes, the proposed modifications took effect automatically.

Henry Levine, a Washington, D.C. attorney who helps users negotiate custom deals from carriers, said some users negotiated contract provisions that would enable them to abandon Tariff 12 if they encountered difficulties such as this. But it is not clear whether that would be in customers' best interest, given that restrictions will be lifted once 800 numbers become portable, which should happen by March 1993. ◘

Vendors ally on distribution

continued from page 1

land International, Inc., Brightwork Development, Inc., DEC, Gradient Technologies, Inc., HP, IBM, Lotus, Microsoft, Novell, Inc., Micrografix, Inc., Symantec Corp. and the Microcomputer Managers Association all contributed to the Common Software Licensing API, according to sources involved in the project.

A source from a company involved in the effort who requested anonymity said, "We're looking for a way for the independent software vendor to bundle [the API] together with a shrink-wrapped package and ship it without developing [applications] for each license server platform. We're trying to make the API operating system independent."

Function calls in bloom

Officials from some or all of the companies will meet here this week to review the specification, which they plan to introduce in March, sources said.

According to the source, who asked to remain anonymous, the API will enable client applications to invoke four function calls to the server-based software distribution manager: request, in which a client asks for a copy of a licensed application; release, in which a client workstation returns a copy of the licensed application to the server; verify, which is still undefined; and access extended functionality, in which a client identifies the server running a particular application.

After this week, the companies will meet for a final session in Utah to put the finishing touches on the API specification before publicly unveiling it in March, the source said.

The companies do not have any plans as yet to submit the API document to standards bodies such as ANSI or the Institute of Electrical and Electronics Engineers, Inc.

Those involved in its definition speculate, however, that the OSF will endorse it. The OSF could not be reached for comment by press time.

Each company involved in the API's development is contributing programming and application development insight relating to its own platform. This is being done by Microsoft with OS/2 LAN Manager and Windows, Novell with NetWare, DEC with its Distributed Software Licensing Architecture on VMS platforms, and HP and Gradient with their NetLS system.

The companies did not say when their products will incorporate the API.

Superset of the DME

Separately, Digital Equipment Corp. and Microsoft are jointly developing a server-based software distribution facility that doles out copies of a licensed application to clients in a heterogeneous network, DEC officials said.

The license manager will be a superset of the HP/Gradient NetLS software license server component of the OSF's Distributed Management Environment (DME), according to the DEC officials.

"The license managers we're developing are far superior in extensibility and openness" to what's available now, said Les Grodberg, business manager for DEC's software licensing technology group. "It will be the predominant one in the industry."

DEC and Microsoft's licensing activity is a necessary extension of their broad joint development and marketing arrangement, according to Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consultancy.

"They're getting into the software distribution business because it's very important," Dzubeck said. "This came out of their discussions over the last four or five months."

Grodberg said the license management technology in the OSF's DME is "not sufficient" for future software distribution methods for a heterogeneous network.

He added that the facility that DEC and Microsoft are developing will have the flexibility to change as software licensing methods and network computing expands.

The DEC officials declined to disclose availability of the license management facility. They said it will adhere to DEC's Network Application Support architecture, meaning it will run on VMS, Ultrix and OS/2 servers now, as well as HP and IBM servers in the future. ◘

Bank turns to EDI to offer info

continued from page 2

paper and delivered via mail, even if payments are executed electronically. But Wagner said large corporations are asking for the integration of electronic funds transfer and remittance information in order to reduce paperwork and avoid accounting errors.

The market has now matured to the point where international financial EDI applications are in demand.

"We have about 400 [financial] EDI customers, including GM, Bechtel [Group, Inc.] and Levi Strauss [Co.]," Wagner said. "We're having active discussions with about 25 of them [about offering international, financial EDI services]."

Wagner predicted that other banks will offer similar services. Some large corporations could eventually switch bankers if their current bank does not offer international, financial EDI services, he said.

"I can point to major customers that wouldn't be here if we couldn't [provide financial EDI services]," Wagner said.

In the international, financial EDI application, Qantas will send electronic payment and remittance information destined for Pratt & Whitney over a local value-added network (VAN) to the Commonwealth Bank of Australia. Commonwealth Bank will forward payment and remittance information over an international VAN to First Chicago. The U.S. bank will then credit Pratt & Whitney's account and forward the remittance information over a domestic VAN to Pratt & Whitney computers in East Hartford.

The SWIFT move

Initially, Wagner said Commonwealth Bank will use a general-purpose VAN to forward payment and remittance information to First Chicago. But he said the banks eventually want to migrate to the Society for Worldwide Interbank Financial Telecommunication's (SWIFT) global network.

SWIFT is a bank consortium that operates a sprawling, global network used to transmit electronic funds transfer instructions between banks around the world. But SWIFT does not support financial EDI transactions between the U.S. and Australia, although it is beginning to support the service in other areas of the world.

Wagner said banks prefer to use SWIFT because it offers vital security features that most general purpose VANs do not support. For example, SWIFT offers encryption and authentication services that enable banks to ensure that a funds transfer message was not altered during transmission. Most general-purpose VANs do not support this service.

10,000 characters

Wagner said Commonwealth Bank and First Chicago have developed software that will enable them to securely transmit financial EDI data over a general purpose VAN. But he said the banks plan to migrate to SWIFT's financial EDI service when available — hopefully, by year end.

Initially, SWIFT's financial EDI service will be limited to messages of as many as 10,000 characters. That means the banks will have to split financial EDI transactions that exceed this length into multiple messages.

Wagner said that by next year, SWIFT is expected to deploy an X.400-based messaging service that will support international financial EDI messages of virtually any size. ◘

Proposed rule raising hackles

continued from page 6

long-distance version of caller ID if there was a patchwork of 51 regulation sets.

The regional Bell holding companies were split over whether the FCC should be involved with caller ID. Three of the carriers — Bell Atlantic Corp., BellSouth Corp. and US West, Inc. — said outright that the FCC should leave regulation to the states.

> “There is no need for a federal model for caller ID,” BellSouth stated.
>
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“There is no need for a federal model for caller ID,” BellSouth stated in a filing last week. According to US West, the FCC should, at most, establish only principles that “describe the landscape it expects or desires to see at any point in time.”

Neither Ameritech nor Nynex Corp. opposed FCC involvement directly, but both had reservations about some of the FCC’s planned rules. According to Ameritech, the federal agency should not become involved in determining whether carriers should offer the service in all states, while Nynex said the FCC should not get involved in deciding caller ID cost issues. All five carriers opposed allowing callers to block their numbers.

Several state agencies told the FCC that its involvement with caller ID is unnecessary and premature because the service is not available on an interstate basis. However, other states, particularly those with fairly strong caller ID rules, urged the FCC to adopt similar regulations.

Pacific Telesis Group and Southwestern Bell Corp. were the only carriers openly supportive of the FCC’s efforts. “Conflicting state and interstate regulatory systems on caller ID can impede the availability of the service and result in substantial unnecessary customer confusion,” Pacific Telesis said in its filing. Both carriers support call blocking.

Users also expressed support for federal regulation of caller ID. The Ad Hoc Telecommunications Users Committee said that to prevent confusion, the FCC should preempt state regulation of the service. It added that interstate caller ID will prompt new applications that will benefit providers and users.

The group supports call blocking to protect callers’ privacy. ◻

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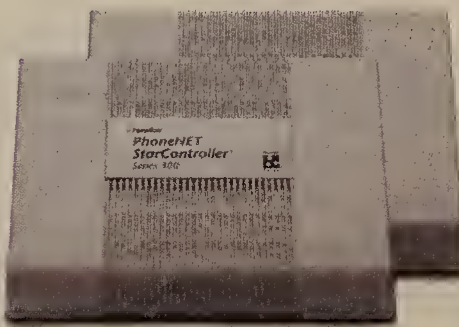

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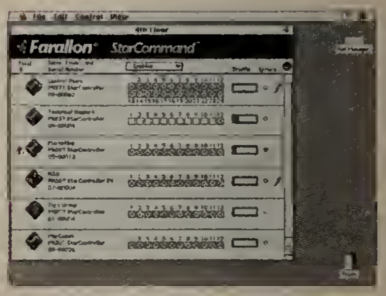

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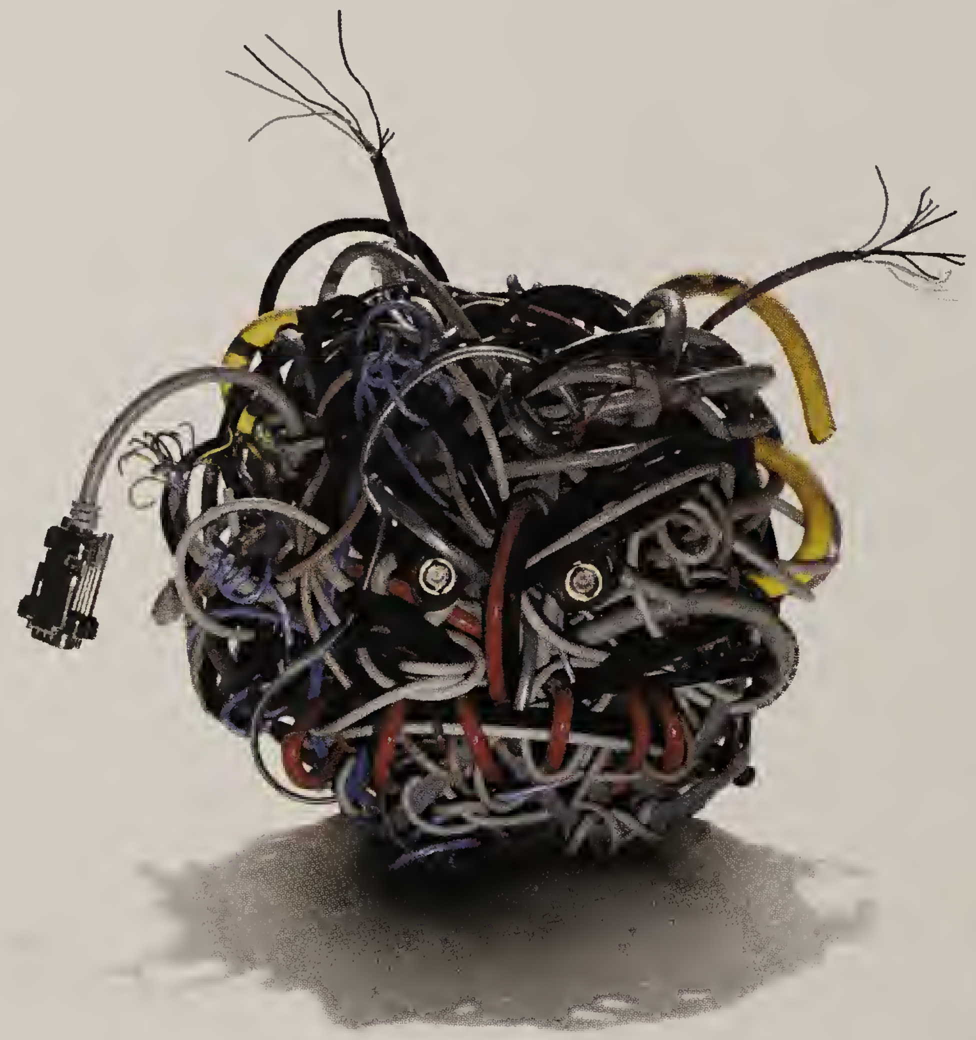
PART 4

If a growing network makes you think of this, Farallon offers two words of advice:



NEW STARCONTROLLER HUBS

- ▶ 24 Ports
- ▶ In-band management
- ▶ Models PN357 and PN377 now shipping

Think again.

Does the thought of expanding your network leave you feeling tied up in knots?

You're probably not alone.

So we'd like to tell you about the PhoneNET StarController®. A simple yet intelligent alternative to what you may have in mind.

StarController LocalTalk and Ethernet hubs use telephone wire—the kind already installed in your walls—to create a network that never needs rewiring. In fact, adding a new Macintosh or PC to the network is as easy as plugging in a new telephone.

Our newest LocalTalk hubs are available with either 12 or 24 ports. And they offer the same reliability and network management capabilities that have made Farallon the industry leader.

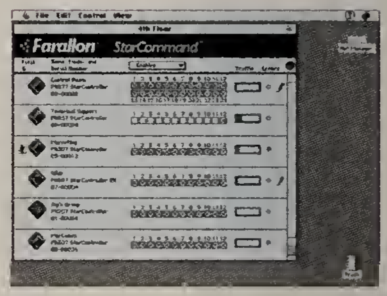
Networks that make sense.

PhoneNET Networks let you link your Macs, and PCs, printers and servers. Using Ethernet, LocalTalk, and Token Ring, with modems and wiring that's already in place. You can extend the network across the building, or across the country. And you can manage it from a desktop. Our networks are used by 2 million people worldwide. Simply because they make sense.

We've also added some new features. For example, you can use our enhanced StarCommand™ 3.0 software to manage hubs over the network or through a fault-tolerant bus. And if you ever do have a problem, StarCommand tells you where it is and, perhaps more importantly, how to fix it.

Of course, if you're thinking about growth, you may be considering Ethernet. Farallon's StarController Ethernet hub lets you add 10BASE-T when and where you need it most.

You can manage our Ethernet and LocalTalk hubs with the same copy of StarCommand.



And all of our hubs are designed for even further expansion. You can mount any StarController you buy today in the PhoneNET® concentrators now under development.

So if network growth is on your mind but you aren't sure what to do first—or what to do next—remember this: PhoneNET from Farallon.

Because when it comes to networking, it pays to think ahead.

For a free Macintosh demonstration disk of StarCommand software, call (800) 344-7489.

PhoneNET® Networks™
Farallon®

2000 Powell Street, Suite 600, Emeryville, CA USA 94608. Fax: (510) 596-9023.
Contact us online at America Online℠, AppleLink®, MCI Mail®, GEnie™ (ID for all: FARALLON) and Compuserve® (ID: 75410,2702) or Internet (ID: FARALLON @ FARALLON.COM).

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NETWORK WORLD

COMNET '92

January 27-31, 1992 • Washington, D.C.

Keynote Update
See Inside

TO: **Network World Readers**
FROM: **Colin B. Ungaro, Publisher**
SUBJECT: **ComNet '92**

Network World is pleased to be a co-sponsor of ComNet, the industry's #1 communications conference and exposition, to be held January 27-31, 1992 in Washington, D.C. I'd like to encourage all *Network World* subscribers to visit ComNet this year and take advantage of this outstanding educational opportunity.

This year's conference theme, "Master the Power of Your Network," was carefully chosen to teach you how to integrate the latest technologies, techniques and products into your current systems, while learning how to leverage your existing capabilities.

Whether you're a newcomer, or a seasoned veteran, from front-line management to the highest executive offices, ComNet '92 offers proven, cost-effective solutions to your most critical networking problems. Practical information, in a variety of learning formats, empowers you with the knowledge to make the most of your network potential now while planning for tomorrow's challenges.

And, in the ComNet '92 exhibit hall, you'll find a solution for every networking concern, along with thousands of products and over 450 exhibitors. (For a complete exhibitor list see the inside back cover of this special issue wrap.)

If you're involved in planning, designing, engineering, building, connecting, installing, customizing, supervising, purchasing, maintaining or managing computing and communications networks, the ComNet exhibit hall is the place to find the answers you need.

For FREE admission to the exhibits, just tear off the ticket below, fill in the form on the back and bring the ticket to Washington. For an overview of the conference program and exhibit hall attractions, please turn the page. Need immediate conference information? **Call 1-800-225-4698.** There's still plenty of time to register.

Again, I cordially invite all our readers to attend. And while you're at ComNet, please visit the Network World/IDG Communications booth (# 1418 in the Second Floor of the Washington Convention Center).

TEAR HERE

ADMIT ONE

Bring to Show

FREE ADMISSION TICKET

COMNET '92

January 27-31, 1992 • Washington, D.C.
Washington Convention Center • Ramada Renaissance Techworld • The Grand Hyatt Hotel
Washington, D.C.

EXHIBIT HALL
Admission Fee: $~~50~~ FREE

Exhibit Hall Hours

Tuesday January 28	Wednesday January 29	Thursday January 30
10:00 a.m. - 5:30 p.m.	10:00 a.m. - 5:30 p.m.	10:00 a.m. - 4:00 p.m.

ADMIT ONE

ComNet '92

January 27-31, 1992 • Washington, D.C.

Here is an overview of all the exciting educational events you'll find at ComNet!

Keynote Address

- **"National Information Infrastructure: Now is the Time!"** presented by George Heilmeier, President, Bell Communications Research, on Wednesday January 29 at 9:30 a.m. — open to all ComNet attendees
- Focus — on multimedia information networking and how it may well be to the Information Age what travel, transport, and power were to the Industrial Age. According to Dr. Heilmeier, now is the time for the U.S. to begin building a national information infrastructure based on a pervasive, broadband, intelligent network, and the challenge of mounting and sustaining such an effort is amply justified by the potential benefits*
- Key issues to be covered — the concept of "utilities" or "malls" to generate, transform, store, transmit, and distribute multimedia information; the shift toward tetherless personal communications and nomadic computing; the challenge of enterprise integration; and the critical role that public policy must play*

* please note: The intent of Dr. Heilmeier's presentation was stated incorrectly in the ComNet Conference Program brochure mailed in November. The above description gives the correct focus of his keynote.

Other Conference Highlights

- One- and two-day tutorials with in-depth coverage of critical subjects like Network Design and Management, TCP/IP, FDDI, T1/T3, Broadband Internetworking, Wireless LAN and more
- An Executive Symposium designed especially for corporate and senior MIS/networking executives led by well-known industry analysts and consultants
- Over 65 conference sessions in 10 different tracks including: Rebuilding the Public Network, Making Sense of Policy and Regulations, Issues and Trends in Network Operations and Management, Planning and Designing Global Networks, Advanced Networks, Building the Enterprise Internet, Getting Started in Cooperative Processing, LAN Architecture and Design, Managing and Optimizing LANs, and LAN Applications
- Hands-on, how-to technical workshops that teach practical skills, including Designing and Building the Network Control Center, Getting Your Best Deal on Outsourcing and Bulk Agreements, Internetwork Troubleshooting, and more
- FREE Federal Communications Forum for government users and suppliers

Show Highlights

- The latest voice and data communications, internetworking and network computing products and services represented on the exhibit floor
- Every key manufacturer and service provider in the communications industry — over 450 in all
- Over 150 new products unveiled as part of ComNet's prestigious New Product Program
- An exciting ISDN Showcase where you can see ISDN live and in action
- France Telecom representing France as the first partner country in ComNet's exclusive new Partner-Country Program

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ComNet '92

January 27-31, 1992 • Washington, D.C.

Washington Convention Center • Ramada Renaissance Techworld • The Grand Hyatt Hotel

Bring this Ticket for FREE Exhibit Hall Admission

Fill out this form for FREE Exhibit Hall admission. On-site registration without this ticket is $50.00. For more information about ComNet's conference program call TOLL FREE 800-225-4698 or 508-879-6700.

Sections A-E must be completed to process your registration.

A. Please type or print clearly.

Name______________________________

Title______________________________

Company______________________________

Address______________________________

City ________________ State _______ Zip________

Telephone______________________________

No one under 18 admitted. This form may be duplicated.

B. Your Business or Profession (Circle One)
1. Manufacturing
2. Retailing
3. Wholesaling/Distribution
4. Insurance/Banking/Financial
5. Professional/Service
6. Education
7. Health Care
8. Government
9. Communications Carriers
10. Voice Communications Equipment
11. Computer Equipment
12. Datacom Equipment
13. Information Service
14. Consultant
15. Software
16. Other (Specify)__________

C. Your Job Title/Function

Communications Users:
1. General Management
2. Marketing/Sales
3. Production/Operations
4. Telecom Management
5. Voice Communications Management Only
6. Data Communications Management Only
7. Network Systems Analyst/Planner
8. EDP System/Program/Planning
9. Local Area Network Management

Communications manufacturers/vendors:

10. General Management
11. Marketing/Sales
12. Hardware Manufacturing & Development
13. Software Development
14. Engineering
15. Consultant
16. Other (Specify) __________

D. Size of Your Organization (Circle One)
1. Under 100
2. 100-499
3. 500-999
4. 1,000 - 4,999
5. Over 5,000

E. What is your role in the purchasing process of communications equipment and services (Circle One)
1. Final decision maker
2. Recommend
3. Specify
4. No role

WRT

TEAR HERE